

# BOSCH INJ. PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : DEE 7,6 H10  
Edition : 06.11.87  
Superseded : 4.3.87  
Calibrating oil : ISO-4113

Combination no. : 9 400 230 069

Injection pump  
Pump designation : PES6A100D41ORS2676-1  
EP type number : 9 410 230 024  
Governor  
Governor design. : RSV450...1000A1C2186  
-1L  
Governor no. : 9 420 234 149

Customer-spec. information  
Customer : JOHN DEERE

Engine : 6466A

1st version kW : 140.0  
Speed 1/min: 2000

## TEST BENCH REQUIREMENTS

Calibrating-oil  
inlet temp. °C : 38...42

Overflow valve : 1 457 413 010

Inlet press., bar : 1.50

Calibrating nozzle-holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 172...175

Test inj. tubing : 1 680 750 014

Outside diameter  
x Wall thickness  
x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set constant delivery quant.  
per values -----

## START OF DELIVERY

Test pressure, bar: 27...29

Prestroke mm : 2.45...2.55  
: (2.40...2.60)

Contr.-rod trav.mm: 10.50...10.50  
Cam sequence : 1- 5- 3- 6- 2- 4

SD ang. spacing°CS: 0-60-120-180-240-300  
Tolerance + - ° : 0.50 (0.75)

SD mark cyl. no. : 1

## BASIC SETTING

1st speed 1/mi: 1000

Contr.-rod trav.mm: 11.60...11.60

Del.quantity cm3/ : 12.1...12.3

100H.: (11.9...12.5)

Dispersion cm3/ : 0.3

100H.: (0.6)

2nd speed 1/min: 450.0  
Contr.-rod trav. m: 5.8...6.0

Del.quantity cm3/ : 1.8...2.2

100H.: (1.5...2.4)

Dispersion cm3/ : 0.3

100H.: (0.5)

## SLEEVE POSITION

Control-lever position

Degree: -3

Speed 1/min: 800

Contr.-rod travelmm: 0.30...0.70

## FULL-LOAD DELIV. AT FULL-LOAD STOP

1st version

Speed 1/min: 1000

Del.quantity cm3/ : 121.5...123.5

1000H.: (119.5...125.0)

Dispersion cm3/ : 3.50

1000H.: (6.00)

## HIGHEST RATED SPEED

1st version

Control-lever

position degrees: 47...55

Testing:

1st c-rod trav.mm : 10.60

Speed 1/min : 1045...1055

2nd c-rod trav.mm : 4.00

Speed 1/min : 1070...1100

4th speed 1/min : 1150

C-rod trav.mm : 0.30...1.40

#### LOWEST RATED SPEED I

Control-lever

position degrees: 23...31

Setting point w/out aux. spring

Speed 1/min : 450

Contr.-rod trav.mm: 5.4

#### Testing:

Speed 1/min : 100

C-rod trav.mm min : 19.00

Speed 1/min : 450

C-rod trav.mm : 5.80...6.00

C-rod trav.mm : 2.00

Speed 1/min : 550...610

#### TORQUE CONTROL

Torque-control curve - 1st version

1st speed 1/min : 1000

C-rod trav.mm : 11.60...11.60

2nd speed 1/min : 700

C-rod trav.mm : 12.50...12.70

#### FUEL-DELIVERY CHARACTERISTICS

##### 1st version

Speed 1/min : 700

Del.quantity cm3/ : 132.0...135.0

1000H.: (129.5...137.5)

#### ROTATIONAL-SPEED LIMITATION

##### 1st version

1mm control-rod travel less than

full-load trav.mm: 10.60

Speed 1/min : 1045...1055

#### STARTING FUEL DELIVERY

Speed 1/min : 100

Del.quantity cm3/ : 190.0...210.0

1000H.: (185.0...215.0)

Contr.-rod trav.mm: 19.00...21.00

#### HIGH IDLE

##### 1st version

Speed 1/min : 1075

Contr.-rod trav.mm: 5.90...6.10

#### LOW IDLE

Speed 1/min : 450

Contr.-rod trav.mm: 5.80...6.00

Del.quantity cm3/ : 18.0...22.0

1000H.: (15.5...24.5)

Dispersion cm3/ : 3.50

1000H.: (5.50)

Remarks:

:

Adjustment without torque-control

spring retainer with 1 mm less

Start-of-delivery mark at 14° angular

displacement of the cam after start of

delivery of cylinder 1 with control-rod

travel = 10.50 mm.



# BOSCH INJ. PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : CAS 8,3 D 1  
 Edition : 06.11.87  
 Superseded : 7.86  
 Calibrating oil : ISO-4113  
 Combination no. : 9 400 230 080  
 Injection pump  
 Pump designation : PES6A95D42OLS2551  
 EP type number : 9 410 230 001  
 Governor  
 Governor design. : RSV375...1100AOC2166  
 -1R  
 Governor no. : 9 420 234 175

Customer-spec. information  
 Customer : J.I.CASE

Engine : A-5048D

1st version kW : 92.0  
 Speed 1/min: 2200

## TEST BENCH REQUIREMENTS

Calibrating-oil  
 inlet temp. °C : 38...42

Overflow valve : 9 681 273 009

Inlet press., bar : 1.50

Calibrating nozzle-holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test inj. tubing : 9 681 271 020

Outside diameter  
 x Wall thickness  
 x Length mm : 6.35X2.00X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set constant delivery quant.  
 per values -----

## START OF DELIVERY

Test pressure, bar: 27...29

Prestroke mm : 2.20...2.30  
 : (2.15...2.35)

Contr.-rod trav.mm: 10.50...10.50  
 Cam sequence : 1- 5- 3- 6- 2- 4

SD ang. spacing°CS: 0-60-120-180-240-300  
 Tolerance + - ° : 0.50 (0.75)

SD mark cyl. no. : 1

## BASIC SETTING

1st speed 1/mi: 1100  
 -----  
 Contr.-rod trav.mm: 10.50...10.50  
 -----  
 Del.quantity cm3/ : 7.6...7.8  
 -----  
 100H.: (7.4...8.0)  
 -----  
 Dispersion cm3/ : 0.3  
 -----  
 100H.: (0.6)  
 -----

2nd speed 1/min: 375.0  
 Contr.-rod trav. m: 7.7...7.9  
 Del.quantity cm3/ : 1.6...2.0  
 100H.: (1.3...2.2)  
 Dispersion cm3/ : 0.3  
 100H.: (0.5)

## SLEEVE POSITION

Control-lever position  
 Degree: -3  
 Speed 1/min: 800  
 Cont.-rod travelmm: 0.30...0.70

## FULL-LOAD DELIV. AT FULL-LOAD STOP

1st version  
 Speed 1/min: 1100  
 Del.quantity cm3/ : 76.0...78.0  
 1000H.: (74.0...80.0)  
 Dispersion cm3/ : 3.50  
 1000H.: (6.00)

## HIGHEST RATED SPEED

1st version  
 Control-lever  
 position degrees: 42...50

Testing:  
 1st c-rod trav.mm : 9.50  
 Speed 1/min : 1160...1170  
 2nd c-rod trav.mm : 4.00  
 Speed 1/min : 1230...1250  
 4th speed 1/min : 1350  
 C-rod trav.mm : 0.30...1.40

#### LOWEST RATED SPEED I

Control-lever  
position degrees: 26...34  
Setting point w/out aux. spring  
Speed 1/min : 375  
Contr.-rod trav.mm: 7.8

#### Testing:

Speed 1/min : 100  
Speed 1/min : 375  
C-rod trav.mm : 7.70...7.90  
C-rod trav.mm : 2.00  
Speed 1/min : 670...730

#### SET IDLE AUXILIARY SPRING

Speed 1/min : 1280  
Contr.-rod trav.mm: 2.00

#### TORQUE CONTROL

Torque-control curve - 1st version  
1st speed 1/min : 1100  
C-rod trav.mm : 10.50...10.50  
2nd speed 1/min : 700  
C-rod trav.mm : 11.80...12.00  
3rd speed 1/min : 600  
C-rod trav.mm : 12.15...12.25

#### FUEL-DELIVERY CHARACTERISTICS

##### 1st version

Speed 1/min : 700  
Del.quantity cm3/ : 86.5...89.5  
1000H.: (84.0...92.0)  
Dispersion cm3/ : 5.00  
1000H.: (7.00)  
Speed 1/min : 600  
Del.quantity cm3/ : 94.0...94.0  
1000H.: (96.0...96.0)  
Dispersion cm3/ : 5.00  
1000H.: (7.00)

#### ROTATIONAL-SPEED LIMITATION

##### 1st version

1mm control-rod travel less than

full-load trav.mm: 9.50  
Speed 1/min : 1160...1170

#### STARTING FUEL DELIVERY

Speed 1/min : 100  
Del.quantity cm3/ : 13.5...14.5  
1000H.: (13.2...14.8)  
Contr.-rod trav.mm: 17.80...17.80

#### LOW IDLE

A04

Speed 1/min : 375  
Contr.-rod trav.mm: 7.70...7.90  
Del.quantity cm3/ : 16.0...20.0  
1000H.: (13.5...22.5)  
Dispersion cm3/ : 3.50  
1000H.: (5.50)

#### Remarks:

: CASE - A-166 258

Adjustment without torque-control  
spring retainer with 1 mm less  
control-rod travel. Increase in  
full-load delivery with torque-control  
spring retainer.

# BOSCH INJ. PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : CUM 8,3 A 6  
 Edition : 06.11.87  
 Superceeded : -  
 Calibrating oil : ISO-4113  
 Combination no. : 9 400 230 109  
 Injection pump  
 Pump designation : PES6A1000320/3RS2691  
 EP type number : 9 410 230 030  
 Governor  
 Governor design. : RSV400...1100A2C2190  
 -21R  
 Governor no. : 9 420 234 164  
 Customer-spec. information  
 Customer : C.D.C.  
 Engine : 6CT830  
 1st version kW : 117.1  
 Speed 1/min: 2200

## TEST BENCH REQUIREMENTS

Calibrating-oil  
 inlet temp. °C : 38...42  
 Overflow valve : 1 417 413 047  
 Inlet press., bar : 1.50  
 Calibrating nozzle-holder  
 assembly : 1 688 901 017  
 Opening  
 pressure, bar : 207...210  
 Perforated-plate  
 diameter mm : 0,6  
 Test inj. tubing : 9 681 271 029  
 Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X2.00X600  
 (A) Injection pump setting values  
 Insp. values in parentheses  
 Set constant delivery quant.  
 per values -----

## START OF DELIVERY

Test pressure, bar: 27...29

A05

Prestroke mm : 2.80...2.90  
 : (2.75...2.95)  
 Contr.-rod trav.mm: 10.50...10.50  
 Cam sequence : 1- 5- 3- 6- 2- 4

SD ang. spacing°CS: 0-60-120-180-240-300  
 Tolerance + - ° : 0.50 (0.75)

SD mark cyl. no. : 1

## BASIC SETTING

1st speed 1/mi: 1100  
 -----  
 Contr.-rod trav.mm: 10.60...10.70  
 -----  
 Del.quantity cm3/ : 9.3...9.5  
 -----  
 100H.: (9.1...9.5)  
 -----  
 Dispersion cm3/ : 0.3  
 -----  
 100H.: (0.6)  
 -----  
 2nd speed 1/min: 400.0  
 Contr.-rod trav. m: 5.8...6.0  
 Del.quantity cm3/ : 1.6...2.0  
 100H.: (1.3...2.2)  
 Dispersion cm3/ : 0.3  
 100H.: (0.5)

## SLEEVE POSITION

Control-lever position  
 Degree: -3  
 Speed 1/min: 800  
 Cont.-rod travelmm: 0.30...0.70

## FULL-LOAD DELIV. AT FULL-LOAD STOP

1st version  
 Speed 1/min: 1100  
 Del.quantity cm3/ : 93.5...95.5  
 1000H.: (91.5...95.5)  
 Dispersion cm3/ : 3.50  
 1000H.: (6.00)

## HIGHEST RATED SPEED

1st version  
 Control-lever  
 position degrees: 45...54

Testing:  
 1st c-rod trav.mm : 9.60  
 Speed 1/min : 1140...1150  
 2nd c-rod trav.mm : 4.00  
 Speed 1/min : 1195...1225

4th speed 1/min : 1300  
C-rod trav.mm : 0.30...1.40

: C.D.C. - 391 1541

#### LOWEST RATED SPEED I

Control-lever  
position degrees: 25...33  
Setting point w/out aux. spring  
Speed 1/min : 400  
Contr.-rod trav.mm: 5.4

#### Testing:

Speed 1/min : 100  
C-rod trav.mm min : 19.00  
Speed 1/min : 400  
C-rod trav.mm : 5.80...6.00  
C-rod trav.mm : 2.00  
Speed 1/min : 440...500

#### TORQUE CONTROL

Torque-control curve - 1st version  
1st speed 1/min : 1100  
C-rod trav.mm : 10.60...10.70  
2nd speed 1/min : 750  
C-rod trav.mm : 11.10...11.30

#### FUEL-DELIVERY CHARACTERISTICS

##### 1st version

Speed 1/min : 750  
Del.quantity cm3/ : 99.0...103.0  
1000H.: (97.0...105.0)

#### ROTATIONAL-SPEED LIMITATION

##### 1st version

1mm control-rod travel less than

full-load trav.mm: 9.60  
Speed 1/min : 1140...1150

#### STARTING FUEL DELIVERY

Speed 1/min : 100  
Del.quantity cm3/ : 14.0...15.0  
1000H.: (13.5...15.5)  
Contr.-rod trav.mm: 19.00...21.00

#### LOW IDLE

Speed 1/min : 400  
Contr.-rod trav.mm: 5.80...6.00  
Del.quantity cm3/ : 16.0...20.0  
1000H.: (13.5...22.5)  
Dispersion cm3/ : 3.50  
1000H.: (5.50)

Remarks:

A06

# BOSCH INJ. PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : CUM 8,3 A 7  
Edition : 06.11.87  
Superceeded : -  
Calibrating oil : ISO-4113

Combination no. : 9 400 230 110

Injection pump  
Pump designation : PES6A100D320/3RS2691  
-4

EP type number : 9 410 230 030  
Governor  
Governor design. : RSV400...1100AOC2190  
-22R

Governer no. : 9 420 234 173

Customer-spec. information  
Customer : C.D.C.

Engine : 6CT830

1st version kW : 150.6  
Speed 1/min: 2200

## TEST BENCH REQUIREMENTS

Calibrating-oil  
inlet temp. °C : 38...42

Overflow valve  
: 1 417 413 047

Inlet press., bar : 1.50

Calibrating nozzle-holder  
assembly : 1 688 901 017

Opening  
pressure, bar : 207...210

Perforated-plate  
diameter mm : 0,6

Test inj. tubing : 9 681 271 029

Outside diameter  
x Wall thickness  
x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set constant delivery quant.  
per values -----

## START OF DELIVERY

A07

Test pressure, bar: 27...29

Prestroke mm : 2.80...2.90  
: (2.75...2.95)  
Contr.-rod trav.mm: 10.50...10.50  
Cam sequence : 1- 5- 3- 6- 2- 4

SD ang. spacing<sup>0</sup>CS: 0-60-120-180-240-300  
Tolerance + - ° : 0.50 (0.75)

SD mark cyl. no. : 1

## BASIC SETTING

1st speed 1/mi: 1100

Contr.-rod trav.mm: 12.40...12.50

Del.quantity cm3/ : 12.1...12.3

100H.: (11.9...12.5)

Dispersion cm3/ : 0.3

100H.: (0.6)

2nd speed 1/min: 400.0

Contr.-rod trav. m: 5.8...6.0

Del.quantity cm3/ : 1.6...2.0

100H.: (1.3...2.2)

Dispersion cm3/ : 0.3

100H.: (0.5)

## SLEEVE POSITION

Control-lever position

Degree: -3

Speed 1/min: 800

Cont.-rod travelmm: 0.30...0.70

## FULL-LOAD DELIV. AT FULL-LOAD STOP

1st version

Speed 1/min: 1100

Del.quantity cm3/ : 121.5...123.5

1000H.: (119.5...125.5)

Dispersion cm3/ : 3.50

1000H.: (6.00)

## HIGHEST RATED SPEED

1st version

Control-lever

position degrees: 42...50

Testing:

1st c-rod trav.mm : 11.40

Speed 1/min : 1140...1150

2nd c-rod trav.mm : 4.00

Speed 1/min : 1195...1225  
4th speed 1/min : 1300  
C-rod trav.mm : 0.30...1.40

#### LOWEST RATED SPEED I

Control-lever  
position degrees: 22...30  
Setting point w/out aux. spring  
Speed 1/min : 400  
Contr.-rod trav.mm: 5.4

#### Testing:

Speed 1/min : 100  
C-rod trav.mm min : 19.00  
Speed 1/min : 400  
C-rod trav.mm : 5.30...5.50  
C-rod trav.mm : 2.00  
Speed 1/min : 460...520

#### TORQUE CONTROL

Torque-control curve - 1st version  
1st speed 1/min : 1100  
C-rod trav.mm : 12.40...12.50  
2nd speed 1/min : 750  
C-rod trav.mm : 13.50...13.70

#### FUEL-DELIVERY CHARACTERISTICS

##### 1st version

Speed 1/min : 750  
Del.quantity cm<sup>3</sup>/ : 136.0...140.0  
1000H.: (134.0...142.0)

#### ROTATIONAL-SPEED LIMITATION

##### 1st version

1mm control-rod travel less than

full-load trav.mm: 11.40  
Speed 1/min : 1140...1150

#### STARTING FUEL DELIVERY

Speed 1/min : 100  
Del.quantity cm<sup>3</sup>/ : 140.0...150.0  
1000H.: (135.0...155.0)  
Contr.-rod trav.mm: 21.00...21.00

#### LOW IDLE

Speed 1/min : 400  
Contr.-rod trav.mm: 5.80...6.00  
Del.quantity cm<sup>3</sup>/ : 16.0...20.0  
1000H.: (13.5...22.5)  
Dispersion cm<sup>3</sup>/ : 3.50  
1000H.: (5.50)

#### Remarks:

: C.D.C. - 391 1542

Adjustment without torque-control  
spring retainer with 1 mm less  
Limit shutoff stop screw to 1.0 mm.  
full-load delivery with torque-control  
spring retainer.

# BOSCH INJ. PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : CUM 8,3 A 8  
Edition : 06.11.87  
Superceeded : -  
Calibrating oil : ISO-4113

Combination no. : 9 400 230 111

Injection pump  
Pump designation : PES6A1000320/3RS2691  
-4

EP type number : 9 410 230 030  
Governor  
Governor design. : RSV400...1100AOC2190  
-23R  
Governor no. : 9 420 234 174

Customer-spec. information  
Customer : C.D.C.

Engine : 6CT830

1st version kW : 134.2  
Speed 1/min: 2200

## TEST BENCH REQUIREMENTS

Calibrating-oil  
inlet temp. °C : 38...42

Overflow valve  
: 1 417 413 047

Inlet press., bar : 1.50

Calibrating nozzle-holder  
assembly : 1 688 901 017

Opening  
pressure, bar : 207...210

Perforated-plate  
diameter mm : 0,6

Test inj. tubing : 9 681 271 029

Outside diameter  
x Wall thickness  
x Length mm : 6.00x2.00x600

(A) Injection pump setting values  
Insp. values in parentheses  
Set constant delivery quant.  
per values -----

## START OF DELIVERY

A09

Test pressure, bar: 27...29

Prestroke mm : 2.80...2.90  
: (2.75...2.95)  
Contr.-rod trav.mm: 10.50...10.50  
Cam sequence : 1- 5- 3- 6- 2- 4

SD ang. spacing°CS: 0-60-120-180-240-300  
Tolerance + - : 0.50 (0.75)

SD mark cyl. no. : 1

## BASIC SETTING

1st speed 1/mi: 1100  
-----  
Contr.-rod trav.mm: 11.90...12.00  
-----  
Del.quantity cm3/ : 11.3...11.5  
-----  
100H.: (11.1...11.7)  
-----  
Dispersion cm3/ : 0.3  
-----  
100H.: (0.6)  
-----

2nd speed 1/min: 400.0  
Contr.-rod trav. m: 5.8...6.0  
Del.quantity cm3/ : 1.6...2.0  
100H.: (1.3...2.2)  
Dispersion cm3/ : 0.3  
100H.: (0.5)

## SLEEVE POSITION

Control-lever position  
Degree: -3  
Speed 1/min: 800  
Cont.-rod travelmm: 0.30...0.70

## FULL-LOAD DELIV. AT FULL-LOAD STOP

1st version  
Speed 1/min: 1100  
Del.quantity cm3/ : 113.5...115.5  
1000H.: (111.5...117.5)  
Dispersion cm3/ : 3.50  
1000H.: (6.00)

## HIGHEST RATED SPEED

1st version  
Control-lever  
position degrees: 47...55

Testing:  
1st c-rod trav.mm : 10.90  
Speed 1/min : 1140...1150  
2nd c-rod trav.mm : 4.00

Speed 1/min : 1215...1245  
4th speed 1/min : 1300  
C-rod trav.mm : 0.30...1.40

#### LOWEST RATED SPEED I

Control-lever  
position degrees: 27...35  
Setting point w/out aux. spring  
Speed 1/min : 400  
Contr.-rod trav.mm: 5.4

#### Testing:

Speed 1/min : 100  
C-rod trav.mm min : 19.00  
Speed 1/min : 400  
C-rod trav.mm : 5.80...6.00  
C-rod trav.mm : 2.00  
Speed 1/min : 485...545

#### TORQUE CONTROL

Torque-control curve - 1st version  
1st speed 1/min : 1100  
C-rod trav.mm : 11.90...12.00  
2nd speed 1/min : 750  
C-rod trav.mm : 12.60...12.80

#### FUEL-DELIVERY CHARACTERISTICS

##### 1st version

Speed 1/min : 750  
Del.quantity cm3/ : 120.0...124.0  
1000H.: (118.0...126.0)

#### ROTATIONAL-SPEED LIMITATION

##### 1st version

1mm control-rod travel less than

full-load trav.mm: 10.90  
Speed 1/min : 1140...1150

#### STARTING FUEL DELIVERY

Speed 1/min : 100  
Del.quantity cm3/ : 140.0...150.0  
1000H.: (135.0...155.0)  
Contr.-rod trav.mm: 21.00...21.00

#### LOW IDLE

Speed 1/min : 400  
Contr.-rod trav.mm: 5.80...6.00  
Del.quantity cm3/ : 16.0...20.0  
1000H.: (13.5...22.5)  
Dispersion cm3/ : 3.50  
1000H.: (5.50)

#### Remarks:

: C.D.C. - 391 1545

Adjustment without torque-control  
spring retainer with 1 mm less  
Limit shutoff stop screw to 1.0 mm.  
ull-load delivery with torque-control  
pring retainer.



# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : KHD 1 G 27  
Edition : 11.12.87  
Replaces : 9.10.87  
Test oil : ISO-4113  
  
Combination no. : 0 400 463 153  
  
Injection pump  
Pump designation : PES3A80D410/3RS1350  
EP type number : 0 410 483 023  
Governor  
Governor design. : RSV325...1250A2C2168  
-3L  
Governor no. : 0 420 232 475

Customer-spec. information  
Customer : KHD

Engine : F3L912

1st version kW : 40.0  
Rated speed : 2500

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 000

Inlet press., bar : 1.00

Test nozzle holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter  
x Wall thickness  
x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values -----

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 1.90...2.00  
: (1.85...2.05)

Rack travel in mm : 9.00...12.00  
Firing order : 1- 3- 2

Phasing : 0-120-240

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1250

Rack travel in mm : 10.10...10.20

Del. quantity cm<sup>3</sup>/ : 5.7...5.8

100 s: (5.6...6.0)

Spread cm<sup>3</sup> : 0.2

100 s: (0.3)

2nd speed rpm : 325.0

Rack travel in mm : 6.8...7.0

Del. quantity cm<sup>3</sup>/ : 1.0...1.6

100 s: (0.8...1.7)

Spread cm<sup>3</sup> : 0.2

100 s: (0.3)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 3.00

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1250

Del. quantity : 57.5...58.5

1000 : (56.0...60.0)

Spread cm<sup>3</sup> : 2.50

1000 : (3.50)

## RATED SPEED

1st version

Control lever

position degrees: 45...53

Testing:

1st rack travel in: 9.10

Speed rpm : 1290...1300

2nd rack travel in: 4.00

Speed rpm : 1315...1345  
3rd rack travel in: 4.00  
Speed rpm : 1330...1360  
4th rack travel in: 1500  
Speed rpm : 0.30...1.40

#### LOW IDLE 1

Control lever

position degrees: 13...21

Setting point w/out bumper spring

Speed rpm : 325

Rack travel in mm : 5.5

#### Testing:

Speed rpm : 100

Minimum rack travel: 19.50

Speed rpm : 325

Rack travel in mm : 5.40...5.60

Rack travel in mm : 2.00

Speed rpm : 455...515

#### TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1250

Rack travel in m: 10.10...10.20

2nd speed rpm : 500

Rack travel in m: 10.90...11.00

4th speed rpm : 1025

Rack travel in m: 10.50...10.70

#### FUEL DELIVERY CHARACTERISTICS

##### 1st version

Speed rpm : 800

Del. quantity cm<sup>3</sup>/ : 54.0...56.0

1000 s: (52.0...58.0)

Spread cm<sup>3</sup> : 2.00

1000 s: (-)

#### BREAKAWAY

##### 1st version

1<sup>st</sup> rack travel less than

full load rack tr: 9.10

Speed rpm : 1290...1300

#### STARTING FUEL DELIVERY

Speed rpm : 100

Del. quantity cm<sup>3</sup>/ : 130.0...140.0

1000 s: (127.0...143.0)

Rack travel in mm : 19.50...21.00

Remarks:

: DX3.30 V/F

#### APPLICATION

Tractor (tractor engines)

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : KHD 1 G 29  
 Edition : 11.12.87  
 Replaces : 18.9.87  
 Test oil : ISO-4113

Combination no. : 0 400 463 154

Injection pump  
 Pump designation : PES3A800410/3RS1350  
 EP type number : 0 410 483 023  
 Governor  
 Governor design. : RSV325...1175A8C2223  
 -L  
 Governor no. : 0 420 232 482

Customer-spec. information  
 Customer : KHD

Engine : F3L912

1st version kW : 33.0  
 Rated speed : 2350

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 000

Inlet press., bar : 1.00

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter  
 x Wall thickness : 6.00x2.00x600  
 x Length mm

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values -----

## BEGINNING OF DELIVERY

Test pressure, bar : 25...27

Prestroke mm : 1.90...2.00  
 : (1.85...2.05)

Rack travel in mm : 9.00...12.00  
 Firing order : 1- 3- 2

Phasing : 0-120-240

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 800

Rack travel in mm : 10.20...10.50

Del. quantity cm<sup>3</sup>/ : 4.8...4.9

100 s : (4.6...5.0)

Spread cm<sup>3</sup> : 0.2

100 s : (0.4)

2nd speed rpm : 325.0

Rack travel in mm : 6.2...6.4

Del. quantity cm<sup>3</sup>/ : 1.0...1.6

100 s : (0.8...1.7)

Spread cm<sup>3</sup> : 0.2

100 s : (0.3)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 5.50

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 800

Del. quantity : 48.0...49.0

1000 : (46.5...50.5)

Spread cm<sup>3</sup> : 2.50

1000 : (4.00)

## RATED SPEED

1st version

Control lever

position degrees: 52...60

Testing:

1st rack travel in: 8.10

Speed rpm : 1215...1225

2nd rack travel in: 4.00

Speed rpm : 1240...1270  
3rd rack travel in: 4.00  
Speed rpm : 1245...1275  
4th rack travel in: 1420  
Speed rpm : 0.30...1.40

#### LOW IDLE 1

Control lever  
position degrees: 15...23  
Setting point w/out bumper spring  
Speed rpm : 325  
Rack travel in mm : 5.8

#### Testing:

Speed rpm : 100  
Minimum rack trave: 19.50  
Speed rpm : 325  
Rack travel in mm : 6.20...6.40  
Rack travel in mm : 2.00  
Speed rpm : 465...525

#### TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 800  
Rack travel in m: 8.80...8.90  
2nd speed rpm : 500  
Rack travel in m: 10.60...10.70  
3rd speed rpm : 800  
Rack travel in m: 10.20...10.50  
4th speed rpm : 1175  
Rack travel in m: 9.10...9.40

#### FUEL DELIVERY CHARACTERISTICS

##### 1st version

Speed rpm : 1175  
Del.quantity cm3/ : 46.0...50.0  
1000 s: (44.0...52.0)  
Speed rpm : 800  
Del.quantity cm3/ : 45.0...47.0  
1000 s: (43.0...49.0)  
Spread cm3 : 2.50  
1000 s: (4.00)

#### BREAKAWAY

##### 1st version

1mm rack travel less than

full load rack tr: 8.10  
Speed rpm : 1215...1225

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 100.0...110.0  
1000 s: (97.0...113.0)

Rack travel in mm : 17.00...17.30

Remarks:

: RENAULT

#### APPLICATION

Tractor (tractor engines)

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : KHD 1 G 32  
 Edition : 11.12.87  
 Replaces : 2.11.87  
 Test oil : ISO-4113

Combination no. : 0 400 463 155

Injection pump  
 Pump designation : PES3A800410/3RS1350  
 EP type number : 0 410 483 023  
 Governor  
 Governor design. : RSV325...1175A8C2223  
 -1L  
 Governor no. : 0 420 232 483

Customer-spec. information  
 Customer : KHD

Engine : F3L912

1st version kW : 38.0  
 Rated speed : 2350

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 000

Inlet press., bar : 1.00

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values -----

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 1.90...2.00  
 : (1.85...2.05)

Rack travel in mm : 9.00...12.00  
 Firing order : 1- 3- 2

Phasing : 0-120-240

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 800

Rack travel in mm : 10.90...11.00

Del.quantity cm3/ : 5.5...5.6

100 s: (5.4...5.8)

Spread cm3 : 0.2

100 s: (0.3)

2nd speed rpm : 325.0

Rack travel in mm : 5.9...6.1

Del.quantity cm3/ : 0.8...1.4

100 s: (0.6...1.5)

Spread cm3 : 0.2

100 s: (0.3)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 5.00

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 800

Del.quantity : 55.5...56.5

1000 : (54.0...58.0)

Spread cm3 : 2.50

1000 : (3.50)

## RATED SPEED

1st version

Control lever

position degrees: 52...60

Testing:

1st rack travel in: 9.10

Speed rpm : 1215...1225

2nd rack travel in: 4.00

Speed rpm : 1245...1275  
3rd rack travel in: 4.00  
Speed rpm : 1250...1280  
4th rack travel in: 1425  
Speed rpm : 0.30...1.40

#### LOW IDLE 1

Control lever

position degrees: 16...24

Setting point w/out bumper spring

Speed rpm : 325

Rack travel in mm : 5.5

#### Testing:

Speed rpm : 100

Minimum rack travel: 19.50

Speed rpm : 325

Rack travel in mm : 5.90...6.10

Rack travel in mm : 2.00

Speed rpm : 455...515

#### TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1175

Rack travel in m: 10.10...10.20

2nd speed rpm : 500

Rack travel in m: 10.90...11.00

3rd speed rpm : 1050

Rack travel in m: 10.40...10.60

#### FUEL DELIVERY CHARACTERISTICS

##### 1st version

Speed rpm : 1175

Del. quantity cm<sup>3</sup>/ : 56.0...60.0

1000 s: (54.0...62.0)

#### BREAKAWAY

##### 1st version

1mm rack travel less than

full load rack tr: 9.10

Speed rpm : 1215...1225

#### STARTING FUEL DELIVERY

Speed rpm : 100

Del. quantity cm<sup>3</sup>/ : 100.0...110.0

1000 s: (97.0...113.0)

Rack travel in mm : 17.00...17.30

Remarks:

: RENAULT

#### APPLICATION

Tractor (tractor engines)

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : KHD 1 G 33  
 Edition : 11.12.87  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 400 463 156  
 Injection pump  
 Pump designation : PES3A80D410/3RS1350  
 EP type number : 0 410 483 023  
 Governor  
 Governor design. : RSV325...1075A8C2163  
 -5L  
 Governor no. : 0 420 232 493

Customer-spec. information  
 Customer : KHD

Engine : F3L912

1st version kW : 34.0  
 Rated speed : 2150

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 000

Inlet press., bar : 1.00

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00x2.00x600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values -----

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 1.90...2.00  
 : (1.85...2.05)

Rack travel in mm : 9.00...12.00  
 Firing order : 1- 3- 2

Phasing : 0-120-240

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 800

Rack travel in mm : 11.30...11.60

Del. quantity cm<sup>3</sup>/ : 5.3...5.4

100 s: (5.1...5.5)

Spread cm<sup>3</sup> : 0.2

100 s: (0.4)

2nd speed rpm : 325.0

Rack travel in mm : 7.4...7.6

Del. quantity cm<sup>3</sup>/ : 1.0...1.6

100 s: (0.8...1.7)

Spread cm<sup>3</sup> : 0.2

100 s: (0.3)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 4.50

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 800

Del. quantity : 53.0...54.0

1000 : (51.5...55.5)

Spread cm<sup>3</sup> : 2.50

1000 : (4.00)

## RATED SPEED

1st version

Control lever

position degrees: 46...54

Testing:

1st rack travel in: 9.10

Speed rpm : 1115...1125

2nd rack travel in: 4.00

Speed rpm : 1140...1170  
3rd rack travel in: 4.00  
Speed rpm : 1155...1185  
4th rack travel in: 1370  
Speed rpm : 0.30...1.40

#### LOW IDLE 1

Control lever  
position degrees: 14...22  
Setting point w/out bumper spring  
Speed rpm : 325  
Rack travel in mm : 5.7

#### Testing:

Speed rpm : 100  
Minimum rack trave: 19.50  
Speed rpm : 325  
Rack travel in mm : 6.10...6.30  
Rack travel in mm : 2.00  
Speed rpm : 455...515

#### TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 800  
Rack travel in m: 9.70...9.80  
2nd speed rpm : 500  
Rack travel in m: 11.70...11.80  
3rd speed rpm : 800  
Rack travel in m: 11.30...11.60  
4th speed rpm : 1075  
Rack travel in m: 10.10...10.40

#### FUEL DELIVERY CHARACTERISTICS

##### 1st version

Speed rpm : 1075  
Del.quantity cm3/ : 48.5...52.5  
1000 s: (46.5...54.5)  
Speed rpm : 800  
Del.quantity cm3/ : 36.0...38.0  
1000 s: (34.0...40.0)  
Spread cm3 : 2.50  
1000 s: (-)

#### BREAKAWAY

##### 1st version

1mm rack travel less than

full load rack tr: 9.10  
Speed rpm : 1115...1125

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 95.0...105.0  
1000 s: (92.0...108.0)

Rack travel in mm : 17.10...17.30

Remarks: : DX 3.10

#### APPLICATION

Tractor (tractor engines)



# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB 1,8 U 1  
 Edition : 07.01.88  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 400 474 120  
 Injection pump  
 Pump designation : PES4A50D410RS1010  
 EP type number : 0 410 454 023  
 Governor  
 Governor design. : RSV350...1650A2B217D  
 L  
 Governor no. : 0 420 234 111  
 Customer-spec. information  
 Customer : DAIMLER-BENZ

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42  
 Overflow valve : 1 417 413 000  
 Inlet press., bar : 1.00  
 Test nozzle holder  
 assembly : 0 681 343 009  
 Opening  
 pressure, bar : 172...175  
 Test lines : 1 680 750 014  
 Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X2.00X600  
 (A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values -----

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27  
 Prestroke mm : 1.70...1.80  
 : (1.65...1.85)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 1- 3- 4- 2

Phasing : 0-90-180-270

Tolerance + - ° : 0.50 (0.75)

## BASIC SETTING

1st speed rpm : 1650  
 Rack travel in mm : 12.60...12.70  
 Del. quantity cm<sup>3</sup>/ : 2.7...2.8  
 100 s: (2.6...2.9)  
 Spread cm<sup>3</sup> : 0.2  
 100 s: (0.2)  
 2nd speed rpm : 350.0  
 Rack travel in mm : 8.4...8.6  
 Del. quantity cm<sup>3</sup>/ : 1.0...1.4  
 100 s: (0.9...1.4)  
 Spread cm<sup>3</sup> : 0.1  
 100 s: (0.2)

## GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -3  
 Speed rpm : 800  
 Rack travel in mm : 0.30...1.00

Governor spring pre-tension  
 Click setting x : 4.00

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 1650  
 Del. quantity : 27.0...28.0  
 1000 : (26.0...29.0)  
 Spread cm<sup>3</sup> : 2.00  
 1000 : (2.50)

## RATED SPEED

1st version  
 Control lever  
 position degrees: 59...67

Testing:  
 1st rack travel in: 11.60  
 Speed rpm : 1690...1700  
 2nd rack travel in: 4.00  
 Speed rpm : 1745...1775  
 3rd rack travel in: 4.00  
 Speed rpm : 1775...1805  
 4th rack travel in: 1875  
 Speed rpm : 0.30...1.70

## LOW IDLE 1

Control lever  
position degrees: 15...23  
Setting point w/out bumper spring  
Speed rpm : 350  
Rack travel in mm : 8.0

Testing:

Speed rpm : 100  
Minimum rack trave: 19.50  
Speed rpm : 350  
Rack travel in mm : 8.40...8.60  
Rack travel in mm : 2.00  
Speed rpm : 640...700

TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 1650  
Rack travel in m: 12.60...12.70  
2nd speed rpm : 500  
Rack travel in m: 13.80...13.90  
3rd speed rpm : 1200  
Rack travel in m: 13.20...13.40

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 900  
Del.quantity cm3/ : 29.0...30.0  
1000 s: (28.0...31.0)  
Speed rpm : 500  
Del.quantity cm3/ : 28.0...30.0  
1000 s: (27.0...31.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.60  
Speed rpm : 1690...1700

STARTING FUEL DELIVERY

Speed rpm : 100  
Rack travel in mm : 16.30...16.70

Remarks:

:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : KHD 19,0 H  
 Edition : 18.12.87  
 Replaces : 9.82  
 Test oil : ISO-4113

Combination no. : 0 400 640 100

Injection pump  
 Pump designation : PE12A95D610LS2453  
 EP type number : 0 410 690 998  
 Governor  
 Governor design. : RQV300...1150AB1047D  
 L  
 Governor no. : 0 420 214 242

Customer-spec. information  
 Customer : KHD

Engine : F12L413FW

1st version kW : 230.0  
 Rated speed : 2300

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 000

Inlet press., bar : 1.00

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00x2.00x600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values -----

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.00...2.10  
 : (1.95...2.15)

Rack travel in mm : 9.00...12.00  
 Firing order : 1- 4- 9- 8- 5- 2-  
 11- 10- 3- 6- 7- 12

Phasing : 0-15-60-75-120-135-  
 180-195-240-255-300-  
 315

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1150  
 -----  
 Rack travel in mm : 9.20...9.30  
 -----  
 Del. quantity cm<sup>3</sup>/ : 8.1...8.2  
 -----  
 100 s: (7.9...8.4)  
 -----  
 Spread cm<sup>3</sup> : 0.3  
 -----  
 100 s: (0.6)  
 -----  
 2nd speed rpm : 300.0  
 Rack travel in mm : 5.9...6.1  
 Del. quantity cm<sup>3</sup>/ : 0.9...1.5  
 100 s: (0.6...1.7)  
 Spread cm<sup>3</sup> : 0.3  
 100 s: (0.5)

(B) Setting of injection pump  
 with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 300  
 travel mm : 1.40...1.60  
 2nd speed rpm : 750  
 travel mm : 4.00...4.30  
 3rd speed rpm : 1190  
 travel mm : 8.40...8.60

## GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -1  
 Speed rpm : 1150  
 Rack travel in mm : 15.20...17.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 1150  
 Del. quantity : 81.0...82.0  
 1000 : (79.0...84.0)  
 Spread cm<sup>3</sup> : 3.50  
 1000 : (6.00)

## RATED SPEED

1st version  
Control lever  
position degrees: 60...68

### Testing:

1st rack travel in: 8.10  
Speed rpm : 1190...1200  
2nd rack travel in: 4.00  
Speed rpm : 1225...1255  
4th rack travel in: 1350  
Speed rpm : 0.00...1.00

## LOW IDLE 1

Control lever  
position degrees: 7...15

### Testing:

Speed rpm : 100  
Minimum rack travel: 7.50  
Speed rpm : 300  
Rack travel in mm : 5.90...6.10  
Rack travel in mm : 2.00  
Speed rpm : 540...600

## CONSTANT REGULATION

Speed rpm : 325...400

## TORQUE CONTROL

Dimension a mm : 0.40  
Torque control curve - 1st version  
1st speed rpm : 1150  
Rack travel in m: 9.10...9.20  
2nd speed rpm : 950  
Rack travel in m: 9.10...9.40  
3rd speed rpm : 850  
Rack travel in m: 9.40...9.60  
4th speed rpm : 500  
Rack travel in m: 9.50...9.60

## START CUT-OUT

Speed 1/min : 220 (240)

## FUEL DELIVERY CHARACTERISTICS

### 1st version

Speed rpm : 750  
Del. quantity cm<sup>3</sup>/ : 84.5...87.5  
1000 s: (82.0...90.0)  
Speed rpm : 650  
Del. quantity cm<sup>3</sup>/ : 93.5...96.5  
1000 s: (91.0...99.0)

## BREAKAWAY

1st version

A22

1mm rack travel less than

full load rack tr: 8.10  
Speed rpm : 1190...1200

## STARTING FUEL DELIVERY

Speed rpm : 100  
Del. quantity cm<sup>3</sup>/ : 120.0...130.0  
1000 s: (117.0...133.0)  
Rack travel in mm : 15.40...15.80

Remarks:

:

Check electrically unlatched starting  
fuel delivery (EES) with 24 volt.

## APPLICATION

Below-ground operation

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : KHD 19,0 N2  
 Edition : 18.12.87  
 Replaces : 12.9.86  
 Test oil : ISO-4113

Combination no. : 0 400 640 107

Injection pump  
 Pump designation : PE12A95D610LS2590  
 EP type number : 0 410 690 995  
 Governor  
 Governor design. : RQV300...1150AB1047D  
 L  
 Governor no. : 0 420 214 242

Customer-spec. information  
 Customer : KHD

Engine : F12L413FW

1st version kW : 204.0  
 Rated speed : 2300

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve  
 : 1 417 413 000

Inlet press., bar : 1.00

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values -----

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 1.50...1.60  
 : (1.45...1.65)

Rack travel in mm : 9.00...12.00  
 Firing order : 1- 4- 9- 8- 5- 2-  
 11- 10- 3- 6- 7- 12

Phasing : 0-15-60-75-120-135-  
 180-195-240-255-300-  
 315  
 Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1150  
 -----  
 Rack travel in mm : 9.30...9.40  
 -----  
 Del. quantity cm<sup>3</sup>/ : 6.9...7.1  
 -----  
 100 s : (6.7...7.3)  
 -----  
 Spread cm<sup>3</sup> : 0.3  
 -----  
 100 s : (0.6)  
 -----  
 2nd speed rpm : 300.0  
 Rack travel in mm : 7.2...7.4  
 Del. quantity cm<sup>3</sup>/ : 1.4...2.0  
 100 s : (1.1...2.2)  
 Spread cm<sup>3</sup> : 0.7  
 100 s : (-)

(B) Setting of injection pump  
 with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 300  
 travel mm : 1.20...1.30  
 2nd speed rpm : 400  
 travel mm : 2.20...2.60  
 3rd speed rpm : 600  
 travel mm : 3.00...3.50  
 4th speed rpm : 1195  
 travel mm : 8.40...8.50  
 5th speed rpm : 1245  
 travel mm : 9.10...9.30

## GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -1  
 Speed rpm : 1200  
 Rack travel in mm : 15.20...17.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 1150

Del. quantity : 69.0...71.0  
1000 : (67.0...73.0)  
Spread cm<sup>3</sup> : 3.50  
1000 : (6.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 61...69

#### Testing:

1st rack travel in: 8.30  
Speed rpm : 1190...1200  
2nd rack travel in: 4.00  
Speed rpm : 1230...1260  
4th rack travel in: 1350  
Speed rpm : 0.00...1.00

#### LOW IDLE 1

Control lever  
position degrees: 8...16

#### Testing:

Speed rpm : 100  
Minimum rack travel: 7.80  
Speed rpm : 300  
Rack travel in mm : 6.20...6.40

#### CONSTANT REGULATION

Speed rpm : 320...430

#### TORQUE CONTROL

Dimension a mm : 1.10  
Torque control curve - 1st version  
1st speed rpm : 1150  
Rack travel in m: 9.30...9.40  
2nd speed rpm : 500  
Rack travel in m: 10.40...10.50  
3rd speed rpm : 935  
Rack travel in m: 10.10...10.30  
4th speed rpm : 1045  
Rack travel in m: 9.60...9.80

#### START CUT-OUT

Speed 1/min : 220 (240)

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Speed rpm : 800  
Del. quantity cm<sup>3</sup>/ : 79.5...82.5  
1000 s: (77.0...85.0)  
Speed rpm : 650  
Del. quantity cm<sup>3</sup>/ : 93.5...96.5  
1000 s: (91.0...99.0)

#### RACK STOP ADJUSTMENT

Speed rpm : 500

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 8.30  
Speed rpm : 1190...1200

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del. quantity cm<sup>3</sup>/ : 120.0...130.0  
1000 s: (117.0...133.0)  
Rack travel in mm : 15.40...15.80

#### Remarks:

Check electrically unlatched starting  
fuel delivery (EES) with 24 volt.

2. Set fuel delivery in fuel-delivery  
characteristics with stop above the  
governor housing.

#### APPLICATION

Below-ground operation

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : KHD 9,6 I 1  
 Edition : 11.12.87  
 Replaces : 4.86  
 Test oil : ISO-4113  
 Combination no. : 0 400 646 271  
 Injection pump  
 Pump designation : PE6A95D41OLS2621  
 EP type number : 0 410 696 982  
 Governor  
 Governor design. : RQV300...1250AB1195L  
 Governor no. : 0 420 212 172

Customer-spec. information  
 Customer : KHD

Engine : F6L413F

1st version kW : 141.0  
 Rated speed : 2500

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 000

Inlet press., bar : 1.00

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter  
 x wall thickness  
 x Length mm : 6.00x2.00x600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values -----

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.00...2.10  
 : (1.95...2.15)  
 Rack travel in mm : 9.00...12.00

Firing order : 1- 6- 5- 4- 3- 2

Phasing : 0-75-120-195-240-315

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1250

Rack travel in mm : 10.40...10.50

Del. quantity cm<sup>3</sup>/ : 9.4...9.6

100 s: (9.2...9.8)

Spread cm<sup>3</sup> : 0.3

100 s: (0.6)

2nd speed rpm : 300.0

Rack travel in mm : 6.5...6.7

Del. quantity cm<sup>3</sup>/ : 0.8...1.4

100 s: (0.5...1.6)

Spread cm<sup>3</sup> : 0.3

100 s: (0.5)

(B) Setting of injection pump  
 with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 300  
 travel mm : 1.20...1.30

2nd speed rpm : 500  
 travel mm : 2.60...2.90

3rd speed rpm : 1000  
 travel mm : 5.40...5.60

4th speed rpm : 1300  
 travel mm : 7.70...7.80

5th speed rpm : 1380  
 travel mm : 8.50...8.80

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1375

Rack travel in mm : 15.20...17.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1250

Del. quantity : 94.0...96.0

1000 : (92.0...98.0)

Spread cm<sup>3</sup> : 3.50

1000 : (6.00)

## RATED SPEED

1st version

Control lever

position degrees: 47...55

Testing:

1st rack travel in: 9.40

Speed rpm : 1290...1300

2nd rack travel in: 4.50

Speed rpm : 1365...1395

4th rack travel in: 1500

Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever

position degrees: 14...22

Testing:

Speed rpm : 100

Minimum rack travel: 8.00

Speed rpm : 300

Rack travel in mm : 6.50...6.70

CONSTANT REGULATION

Speed rpm : 375...485

TORQUE CONTROL

Dimension a mm : 0.50

Torque control curve - 1st version

1st speed rpm : 1250

Rack travel in m: 10.40...10.50

2nd speed rpm : 500

Rack travel in m: 10.90...11.00

3rd speed rpm : 850

Rack travel in m: 10.70...10.90

4th speed rpm : 950

Rack travel in m: 10.50...10.70

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 650

Del. quantity cm<sup>3</sup>/ : 93.5...96.5

1000 s: (91.0...99.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 9.40

Speed rpm : 1290...1300

## STARTING FUEL DELIVERY

Speed rpm : 100

Del. quantity cm<sup>3</sup>/ : 120.0...130.0

1000 s: (117.0...133.0)

Rack travel in mm : 14.40...14.80

Remarks:

:



# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : KHD 9,6 I 2  
Edition : 11.12.87  
Replaces : 18.9.87  
Test oil : ISO-4113  
  
Combination no. : 0 400 646 275  
  
Injection pump  
Pump designation : PE6A95D41OLS2621  
EP type number : 0 410 696 982  
Governor  
Governor design. : RQ300/1250AB1148-1L  
Governor no. : 0 420 200 104

Customer-spec. information  
Customer : KHD

Engine : F6L413F

1st version kW : 141.0  
Rated speed : 2500

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 000

Inlet press., bar : 1.00

Test nozzle holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter  
x Wall thickness  
x Length mm : 6.00x2.00x600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values -----

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.00...2.10  
: (1.95...2.15)

Rack travel in mm : 9.00...12.00

Firing order : 1- 6- 5- 4- 3- 2

Phasing : 0-75-120-195-240-315

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1250

Rack travel in mm : 10.40...10.50

Del. quantity cm<sup>3</sup>/ : 9.2...9.4

100 s: (9.0...9.6)

Spread cm<sup>3</sup> : 0.3

100 s: (0.6)

2nd speed rpm : 300.0

Rack travel in mm : 6.4...6.6

Del. quantity cm<sup>3</sup>/ : 0.8...1.4

100 s: (0.5...1.6)

Spread cm<sup>3</sup> : 0.3

100 s: (0.5)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 600

Rack travel in mm : 16.80...18.40

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1250

Del. quantity : 92.0...94.0

1000 : (90.0...96.0)

Spread cm<sup>3</sup> : 3.50

1000 : (6.00)

## RATED SPEED

1st version

Setting point:

Speed rpm : 600

Rack travel in mm : 17.6

Testing:

1st rack travel in: 9.40

Speed rpm : 1295...1310

2nd rack travel in: 4.00

Speed rpm : 1325...1355

#### LOW IDLE 1

Setting point w/out bumper spring

Speed rpm : 300

Rack travel in mm : 6.5

#### Testing:

Speed rpm : 100

Minimum rack travel: 7.90

Speed rpm : 300

Rack travel in mm : 6.40...6.60

Rack travel in mm : 2.00

Speed rpm : 340...380

#### TORQUE CONTROL

Dimension a mm : 0.17

Torque control curve - 1st version

1st speed rpm : 1250

Rack travel in m: 10.40...10.50

2nd speed rpm : 600

Rack travel in m: 10.90...11.00

3rd speed rpm : 915

Rack travel in m: 10.70...10.90

4th speed rpm : 980

Rack travel in m: 10.40...10.60

#### FUEL DELIVERY CHARACTERISTICS

##### 1st version

Speed rpm : 650

Del. quantity cm<sup>3</sup>/ : 91.5...94.5

1000 s: (89.0...97.0)

#### RACK STOP ADJUSTMENT

Speed rpm : 650

#### BREAKAWAY

##### 1st version

1mm rack travel less than

full load rack tr: 9.40

Speed rpm : 1295...1310

#### STARTING FUEL DELIVERY

Speed rpm : 100

Del. quantity cm<sup>3</sup>/ : 120.0...130.0

1000 s: (117.0...133.0)

Rack travel in mm : 15.30...15.60

Remarks:

:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : KHD 12,7 P  
Edition : 18.12.87  
Replaces : 12.9.86  
Test oil : ISO-4113

Combination no. : 0 400 648 128

Injection pump  
Pump designation : PE8A95D41QLS2608  
EP type number : 0 410 698 988  
Governor  
Governor design. : RQV300...1100AB1126L  
Governor no. : 0 420 212 140

Customer-spec. information  
Customer : KHD

Engine : F8L413F

1st version kW : 168.0  
Rated speed : 2200

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 000

Inlet press., bar : 1.00

Test nozzle holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter  
x Wall thickness  
x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values -----

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.00...2.10  
: (1.95...2.15)

Rack travel in mm : 9.00...12.00

Firing order : 1- 8- 7- 2- 6- 5-  
4- 3

Phasing : 0-45-90-135-180-225-  
270-315

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 10.00...10.10

Del. quantity cm<sup>3</sup>/ : 8.9...9.1

100 s: (8.7...9.3)

Spread cm<sup>3</sup> : 0.3

100 s: (0.6)

2nd speed rpm : 300.0

Rack travel in mm : 6.4...6.6

Del. quantity cm<sup>3</sup>/ : 1.2...2.0

100 s: (0.9...2.2)

Spread cm<sup>3</sup> : 0.5

100 s: (0.7)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 300  
travel mm : 0.70...0.80

2nd speed rpm : 450  
travel mm : 1.90...2.20

3rd speed rpm : 950  
travel mm : 6.40...6.60

4th speed rpm : 1215  
travel mm : 8.90...9.10

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1175

Rack travel in mm : 15.20...17.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100

Del. quantity : 89.0...91.0

1000 : (87.0...93.0)

Spread cm<sup>3</sup> : 3.50

1000 : (6.00)

## RATED SPEED

1st version

Control lever

position degrees: 48...56

Testing:

1st rack travel in: 9.00

Speed rpm : 1140...1150

2nd rack travel in: 4.00

Speed rpm : 1200...1230

4th rack travel in: 1350

Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever

position degrees: 14...20

Testing:

Speed rpm : 100

Minimum rack travel: 8.00

Speed rpm : 300

Rack travel in mm : 6.40...6.60

## CONSTANT REGULATION

Speed rpm : 415...535

## TORQUE CONTROL

Dimension a mm : 0.50

Torque control curve - 1st version

1st speed rpm : 1100

Rack travel in m: 10.00...10.10

2nd speed rpm : 500

Rack travel in m: 10.50...10.60

3rd speed rpm : 760

Rack travel in m: 10.30...10.50

4th speed rpm : 890

Rack travel in m: 10.00...10.20

## START CUT-OUT

Speed 1/min : 220 (240)

## FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 650

Del. quantity cm<sup>3</sup>/ : 90.5...93.5

1000 s: (88.0...95.5)

## RACK STOP ADJUSTMENT

Speed rpm : 500

## BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 9.00

Speed rpm : 1140...1150

## STARTING FUEL DELIVERY

Speed rpm : 100

Del. quantity cm<sup>3</sup>/ : 120.0...130.0

1000 s: (117.0...133.0)

Rack travel in mm : 14.50...14.90

Remarks:

:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : DAF 6,2 I 1  
 Edition : 18.12.87  
 Replaces : 12.9.86  
 Test oil : ISO-4113

Combination no. : 0 400 676 141

Injection pump  
 Pump designation : PE6A90D320RS2547  
 EP type number : 0 410 696 180  
 Governor  
 Governor design. : RSV250...1200ASB779R  
 Governor no. : 0 420 233 121

Customer-spec. information  
 Customer : DAF

Engine : DT615

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 000

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
 x Wall thickness : 6.00X1.50X600  
 x Length mm

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values -----

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.20...2.30  
 : (2.15...2.35)

Rack travel in mm : 7.50...10.50

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 8.50...9.50  
 & maximum rack tra: 21.00  
 Difference ° CS : 2.50...3.50

## BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 10.80...10.90

Del. quantity cm3/ : 7.1...7.2

100 s: (6.9...7.4)

Spread cm3 : 0.3

100 s: (0.4)

2nd speed rpm : 250.0

Rack travel in mm : 5.9...6.1

Del. quantity cm3/ : 0.9...1.3

100 s: (0.7...1.5)

Spread cm3 : 0.2

100 s: (0.4)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...1.00

## FULL LOAD DELIV. AT FULL LOAD STOP

### 1st version

Speed rpm : 1000

Aneroid pressure h: 700

Del. quantity : 71.0...72.0

1000 : (69.0...74.0)

Spread cm3 : 3.00

1000 : (4.50)

## RATED SPEED

### 1st version

Control lever

position degrees: 47...55

### Testing:

1st rack travel in: 9.80

Speed rpm : 1240...1250

2nd rack travel in: 4.00

Speed rpm : 1275...1305  
3rd rack travel in: 4.00  
Speed rpm : 1285...1315  
4th rack travel in: 1450  
Speed rpm : 0.30...1.70

#### LOW IDLE 1

Control lever  
position degrees: 13...21  
Setting point w/out bumper spring  
Speed rpm : 250  
Rack travel in mm : 5.5

#### Testing:

Speed rpm : 100  
Speed rpm : 250  
Rack travel in mm : 5.90...6.10  
Rack travel in mm : 2.00  
Speed rpm : 330...390

#### TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 1000  
Rack travel in m: 11.10...11.20  
2nd speed rpm : 400  
Rack travel in m: 11.30...11.40  
3rd speed rpm : 300  
Rack travel in m: 11.50...12.00

Aneroid/Altitude  
Compensator Test

#### 1st version

Setting  
Speed rpm : 1000  
Rack travel in mm : 700  
Contr.-rod trav.mm: 10.80...10.90

#### Measurement

Speed 1/min : 1000

1st pressure hPa : -  
Rack travel in m: 9.80...10.00  
2nd pressure hPa : 250  
Rack travel in m: 10.60...10.70  
3rd pressure hPa : 210  
Rack travel in m: 10.10...10.40

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: -  
Speed rpm : 600  
Del.quantity cm3/ : 51.5...53.5  
1000 s: (49.5...55.5)

#### BREAKAWAY

804

1st version  
1mm rack travel less than

full load rack tr: 9.80  
Speed rpm : 1240...1250

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 140.0...150.0  
1000 s: (137.0...153.0)  
Rack travel in mm : 19.50...21.00

#### LOW IDLE

Speed rpm : 250  
Rack travel in mm : 5.90...6.10  
Del.quantity cm3/ : 9.0...13.0  
1000 s: (7.0...15.0)  
Spread cm3 : 2.50  
1000 s: (4.50)

Remarks:

Cold-start testing of RSV governor  
according to VDT-I-420/114.

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : DAF 8,3 K 8  
 Edition : 18.12.87  
 Replaces : 5.11.86  
 Test oil : ISO-4113

Combination no. : 0 400 676 176

Injection pump  
 Pump designation : PE6A95D410RS2525  
 EP type number : 0 410 696 987  
 Governor  
 Governor design. : RSV250...1200ASC2199  
 L  
 Governor no. : 0 420 232 443

Customer-spec. information  
 Customer : DAF

Engine : DHTD 825

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 000

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values -----

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.00...2.10  
 : (1.95...2.15)  
 Rack travel in mm : 7.50...10.50  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 8.50...9.50  
 & maximum rack tra: 21.00  
 Difference ° CS : 3.00...4.00

## BASIC SETTING

1st speed rpm : 1000

---

Rack travel in mm : 12.60...12.70

---

Del. quantity cm3/ : 10.9...11.0

---

100 s: (10.7...11.2)

---

Spread cm3 : 0.3

---

100 s: (0.6)

---

2nd speed rpm : 250.0  
 Rack travel in mm : 6.0...6.2  
 Del. quantity cm3/ : 0.7...1.1  
 100 s: (0.4...1.3)

---

Spread cm3 : 0.3  
 100 s: (0.5)

---

## GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -3  
 Speed rpm : 800  
 Rack travel in mm : 0.30...0.70

Governor spring pre-tension  
 Click setting x : 4.25

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 1000  
 Aneroid pressure h: 700  
 Del. quantity : 109.0...110.0  
 1000 : (107.0...112.0)

---

Spread cm3 : 3.50  
 1000 : (6.00)

---

## RATED SPEED

1st version  
 Control lever  
 position degrees: 51...59

### Testing:

1st rack travel in: 11.60  
Speed rpm : 1230...1240  
2nd rack travel in: 4.00  
Speed rpm : 1290...1320  
3rd rack travel in: 4.00  
Speed rpm : 1310...1340  
4th rack travel in: 1490  
Speed rpm : 0.30...1.40

### LOW IDLE 1

Control lever  
position degrees: 17...25  
Setting point w/out bumper spring  
Speed rpm : 250  
Rack travel in mm : 5.6  
Speed rpm : 250  
Rack travel in mm : 6.00...6.20  
Rack travel in mm : 2.00  
Speed rpm : 445...505

### TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 1000  
Rack travel in m: 13.40...13.50  
2nd speed rpm : 400  
Rack travel in m: 13.60...13.70  
3rd speed rpm : 300  
Rack travel in m: 13.80...14.30

### Aneroid/Altitude Compensator Test

### 1st version

Setting  
Speed rpm : 1000  
Rack travel in mm : 700  
Contr.-rod trav.mm: 12.60...12.70

### Measurement

Speed 1/min : 1000

1st pressure hPa : -  
Rack travel in m: 11.50...11.60  
2nd pressure hPa : 300  
Rack travel in m: 12.30...12.40  
3rd pressure hPa : 260  
Rack travel in m: 11.70...11.90

### FUEL DELIVERY CHARACTERISTICS

### 1st version

Aneroid pressure h: -  
Speed rpm : 600  
Del.quantity cm3/ : 85.5...86.5  
1000 s: (83.5...88.5)

### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 11.60  
Speed rpm : 1230...1240

### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 130.0...140.0  
1000 s: (127.0...143.0)  
Rack travel in mm : 19.50...21.00

### LOW IDLE

Speed rpm : 250  
Rack travel in mm : 6.00...6.20  
Del.quantity cm3/ : 7.0...11.0  
1000 s: (4.5...13.5)  
Spread cm3 : 3.50  
1000 s: (5.50)

Remarks:

:



## BOSCH INJ. PUMP TEST SPECIFICATIONS

### Note remarks

Test sheet : DAF 6,2 I 6  
Edition : 18.12.87  
Replaces : 12.9.86  
Test oil : ISO-4113

Combination no. : 0 400 676 180

Injection pump  
Pump designation : PE6A90D320RS2547  
EP type number : 0 410 696 180  
Governor  
Governor design. : RSV250...1200ASC2203  
R  
Governor no. : 0 420 233 203

Customer-spec. information  
Customer : DAF

Engine : DT615

### TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 000

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
x Wall thickness  
x Length mm : 6.00x1.50x600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values -----

### BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.20...2.30  
: (2.15...2.35)

Rack travel in mm : 7.50...10.50

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

### BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 8.50...9.50  
& maximum rack tra: 21.00  
Difference ° CS : 2.50...3.50

### BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 10.80...10.90

Del. quantity cm<sup>3</sup>/ : 7.1...7.2

100 s: (6.9...7.4)

Spread cm<sup>3</sup> : 0.3

100 s: (0.4)

2nd speed rpm : 250.0

Rack travel in mm : 5.9...6.1

Del. quantity cm<sup>3</sup>/ : 0.9...1.3

100 s: (0.7...1.5)

Spread cm<sup>3</sup> : 0.2

100 s: (0.4)

### GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 3.25

### FULL LOAD DELIV. AT FULL LOAD STOP

#### 1st version

Speed rpm : 1000

Aneroid pressure h: 700

Del. quantity : 71.5...72.5

1000 : (69.5...74.5)

Spread cm<sup>3</sup> : 3.00

1000 : (4.50)

### RATED SPEED

#### 1st version

Control lever

position degrees: 47...55

### Testing:

1st rack travel in: 9.80  
Speed rpm : 1240...1250  
2nd rack travel in: 4.00  
Speed rpm : 1270...1300  
3rd rack travel in: 4.00  
Speed rpm : 1305...1335  
4th rack travel in: 1490  
Speed rpm : 0.30...1.40

### LOW IDLE 1

Control lever  
position degrees: 13...21  
Setting point w/out bumper spring  
Speed rpm : 250  
Rack travel in mm : 5.5  
Speed rpm : 250  
Rack travel in mm : 5.90...6.10  
Rack travel in mm : 2.00  
Speed rpm : 560...620

### TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 1000  
Rack travel in m: 11.10...11.20  
2nd speed rpm : 400  
Rack travel in m: 11.30...11.40  
3rd speed rpm : 300  
Rack travel in m: 11.50...12.00

Aneroid/Altitude  
Compensator Test

### 1st version

Setting  
Speed rpm : 1000  
Rack travel in mm : 700  
Contr.-rod trav.mm: 10.80...10.90

### Measurement

Speed 1/min : 1000

1st pressure hPa : -  
Rack travel in m: 9.80...10.00  
2nd pressure hPa : 250  
Rack travel in m: 10.60...10.70  
3rd pressure hPa : 210  
Rack travel in m: 10.10...10.40

### FUEL DELIVERY CHARACTERISTICS

### 1st version

Aneroid pressure h: -  
Speed rpm : 600  
Del.quantity cm3/ : 51.5...53.5  
1000 s: (49.0...56.0)

### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 9.80  
Speed rpm : 1240...1250

### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 140.0...150.0  
1000 s: (137.0...153.0)  
Rack travel in mm : 19.50...21.00

### LOW IDLE

Speed rpm : 250  
Rack travel in mm : 5.90...6.10  
Del.quantity cm3/ : 9.0...13.0  
1000 s: (7.0...15.0)  
Spread cm3 : 2.50  
1000 s: (4.50)

Remarks:

Cold-start testing of RSV governor  
according to VDT-I-420/114.

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : HAN 10,8 K  
Edition : 07.01.88  
Replaces : -  
Test oil : ISO-4113  
  
Combination no. : 0 400 676 189  
  
Injection pump  
Pump designation : PE6A95D32ORS2557  
EP type number : 0 410 696 986  
Governor  
Governor design. : RSV350...750AOC2228-1R  
Governor no. : 0 420 233 215

Customer-spec. information  
Customer : HANOMAG

Engine : D963 A1/G

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42  
  
Overflow valve : 1 417 413 000

Inlet press., bar : 1.00

Test nozzle holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 172...175

Test lines : 1 680 750 003

Outside diameter  
x Wall thickness  
x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values -----

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.15...2.25  
                  : (2.10...2.30)

Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 11.70...11.80

Del. quantity cm3/ : 10.9...11.1

100 s: (10.7...11.3)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 350.0

Rack travel in mm : 6.4...6.6

Del. quantity cm3/ : 1.2...1.8

100 s: (0.9...2.0)

Spread cm3 : 0.3

100 s: (0.5)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 3.00

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700

Del. quantity : 109.0...111.0

1000 : (107.0...113.0)

Spread cm3 : 3.50

1000 : (6.00)

## RATED SPEED

1st version

Control lever

position degrees: 27...35

Testing:

1st rack travel in: 10.70

Speed rpm : 740...750

2nd rack travel in: 4.00

Speed rpm : 780...810

4th rack travel in: 940

Speed rpm : 0.30...1.40

#### LOW IDLE 1

Control lever

position degrees: 17...25

Setting point w/out bumper spring

Speed rpm : 350

Rack travel in mm : 6.5

#### Testing:

Speed rpm : 100

Minimum rack trave: 19.50

Speed rpm : 350

Rack travel in mm : 6.40...6.60

Rack travel in mm : 2.00

Speed rpm : 355...415

#### SET IDLE AUXILIARY SPRING

Rack travel in mm : 2.00

#### TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 700

Rack travel in m: 11.70...11.80

2nd speed rpm : 500

Rack travel in m: 11.70...11.90

#### BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 10.70

Speed rpm : 740...750

#### STARTING FUEL DELIVERY

Speed rpm : 100

Del. quantity cm3/ : 118.0...128.0

1000 s: (115.0...131.0)

Rack travel in mm : 19.50...21.00

Remarks:

:

Cold-start testing of RSV governor  
according to VDT-I-420/114.

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : KHD 6,1 Q  
 Edition : 11.12.87  
 Replaces : -  
 Test oil : ISO-4113

Combination no. : 0 400 836 035

Injection pump  
 Pump designation : PES6ABSD410/3RS2749  
 EP type number : 0 410 886 896  
 Governor  
 Governor design. : RQV325...1250AB1131-1L  
 Governor no. : 0 420 212 211

Customer-spec. information  
 Customer : KHD

Engine : F6L913

1st version kW : 84.0  
 Rated speed : 2500

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 000

Inlet press., bar : 1.00

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values -----

## BEGINNING OF DELIVERY

Test pressure, bar : 25...27

Prestroke mm : 2.50...2.60  
 : (2.45...2.65)

Rack travel in mm : 9.00...12.00  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

## BASIC SETTING

1st speed rpm : 1250  
 -----  
 Rack travel in mm : 10.30...10.40  
 -----  
 Del. quantity cm<sup>3</sup>/ : 6.6...6.7  
 -----  
 100 s : (6.4...6.9)  
 -----  
 Spread cm<sup>3</sup> : 0.3  
 -----  
 100 s : (0.5)  
 -----  
 2nd speed rpm : 325.0  
 Rack travel in mm : 7.0...7.2  
 Del. quantity cm<sup>3</sup>/ : 1.0...1.6  
 100 s : (0.8...1.8)  
 Spread cm<sup>3</sup> : 0.2  
 100 s : (0.4)

(B) Setting of injection pump  
 with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 325  
 travel mm : 1.60...1.70  
 2nd speed rpm : 460  
 travel mm : 3.00...3.30  
 3rd speed rpm : 525  
 travel mm : 3.50...4.00  
 4th speed rpm : 1310  
 travel mm : 8.20...8.30  
 5th speed rpm : 1390  
 travel mm : 9.00...9.20

## GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -1  
 Speed rpm : 1310  
 Rack travel in mm : 15.20...17.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 1250  
 Del. quantity : 66.0...67.0  
 1000 : (64.0...69.0)  
 Spread cm<sup>3</sup> : 3.00  
 1000 : (5.00)

## RATED SPEED

1st version

Control lever

position degrees: 63...71

Testing:

1st rack travel in: 9.30

Speed rpm : 1290...1300

2nd rack travel in: 4.00

Speed rpm : 1375...1405

4th rack travel in: 1500

Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever

position degrees: 13...21

Testing:

Speed rpm : 100

Minimum rack travel: 8.50

Speed rpm : 325

Rack travel in mm : 7.00...7.20

## CONSTANT REGULATION

Speed rpm : 440...550

## TORQUE CONTROL

Dimension a mm : 0.50

Torque control curve - 1st version

1st speed rpm : 1250

Rack travel in m: 10.30...10.40

2nd speed rpm : 500

Rack travel in m: 10.80...10.90

3rd speed rpm : 1005

Rack travel in m: 10.60...10.80

4th speed rpm : 1135

Rack travel in m: 10.40...10.60

## START CUT-OUT

Speed 1/min : 245 (265)

## FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 800

Del. quantity cm<sup>3</sup>/ : 55.0...57.0

1000 s: (52.5...59.5)

Speed rpm : 1000

Del. quantity cm<sup>3</sup>/ : 61.0...67.0

1000 s: (58.5...69.5)

Speed rpm : 1100

Del. quantity cm<sup>3</sup>/ : 62.0...68.0

1000 s: (59.5...70.5)

## BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 9.30

Speed rpm : 1290...1300

## STARTING FUEL DELIVERY

Speed rpm : 100

Del. quantity cm<sup>3</sup>/ : 120.0...130.0

1000 s: (117.0...133.0)

Rack travel in mm : 16.30...16.70

Remarks:

:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MAN 7,0 C 1  
Edition : 11.12.87  
Replaces : 28.8.87  
Test oil : ISO-4113

Combination no. : 0 400 846 264

Injection pump  
Pump designation : PES6A85D32ORS2337  
EP type number : 0 410 886 921  
Governor  
Governor design. : RQ200/1250AB801DR  
Governor no. : 0 420 203 089

Customer-spec. information  
Customer : MAN

Engine : D0846HM42U

1st version kW : 118.0  
Rated speed : 2500

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 000

Inlet press., bar : 1.00

Test nozzle holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter  
x Wall thickness  
x Length mm : 6.00x2.00x600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values -----

## BEGINNING OF DELIVERY

Test pressure, bar : 25...27

Prestroke mm : 1.50...1.60  
: (1.45...1.65)

Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

## BASIC SETTING

1st speed rpm : 1250

Rack travel in mm : 10.70...10.80

Del. quantity cm<sup>3</sup>/ : 7.0...7.1

100 s : (6.8...7.3)

Spread cm<sup>3</sup> : 0.3

100 s : (0.4)

2nd speed rpm : 200.0

Rack travel in mm : 8.4...8.6

Del. quantity cm<sup>3</sup>/ : 1.8...2.4

100 s : (1.6...2.6)

Spread cm<sup>3</sup> : -

100 s : (0.4)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 550

Rack travel in mm : 19.20...20.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1250

Del. quantity : 70.0...71.0

1000 : (68.0...73.0)

Spread cm<sup>3</sup> : 3.00

1000 : (4.50)

## RATED SPEED

1st version

Setting point:

Speed rpm : 550

Rack travel in mm : 20.0

Testing:

1st rack travel in: 9.75

Speed rpm : 1295...1310

2nd rack travel in: 4.00

Speed rpm : 1335...1365

#### LOW IDLE 1

Setting point w/out bumper spring

Speed rpm : 200

Rack travel in mm : 8.5

#### Testing:

Speed rpm : 100

Minimum rack trave: 9.90

Speed rpm : 200

Rack travel in mm : 8.40...8.60

Rack travel in mm : 2.00

Speed rpm : 340...380

#### TORQUE CONTROL

Dimension a mm : 0.30

Torque control curve - 1st version

1st speed rpm : 1250

Rack travel in m: 10.70...10.80

2nd speed rpm : 500

Rack travel in m: 11.40...11.50

4th speed rpm : 1000

Rack travel in m: 11.10...11.30

5th speed rpm : 1125

Rack travel in m: 10.80...11.00

#### FUEL DELIVERY CHARACTERISTICS

##### 1st version

Speed rpm : 500

Del.quantity cm3/ : 0.0...69.5

1000 s: (0.0...72.0)

Speed rpm : 800

Del.quantity cm3/ : 69.0...72.0

1000 s: (66.5...74.5)

#### RACK STOP ADJUSTMENT

Speed rpm : 200

#### BREAKAWAY

##### 1st version

1mm rack travel less than

full load rack tr: 9.75

Speed rpm : 1295...1310

#### STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/ : 123.0...133.0

1000 s: (120.0...136.0)

Rack travel in mm : 18.10...18.50

Remarks:

#### APPLICATION

Omnibus



# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MAN 11.1P25  
 Edition : 11.12.87  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 400 846 510  
 Injection pump  
 Pump designation : PES6A95D410LS2542  
 EP type number : 0 410 896 936  
 Governor  
 Governor design. : RQ250/1100AB1137-9L  
 Governor no. : 0 420 200 091

Customer-spec. information  
 Customer : MAN

Engine : D2566MUH

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 000

Inlet press., bar : 1.00

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values -----

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 1.50...1.60  
 : (1.45...1.65)

Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

## BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 11.00...11.10

Del. quantity cm3/ : 10.0...10.3

100 s: (9.8...10.5)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 250.0

Rack travel in mm : 6.3...6.5

Del. quantity cm3/ : 1.2...1.8

100 s: (0.9...2.0)

Spread cm3 : 0.3

100 s: (0.5)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 600

Rack travel in mm : 15.60...16.40

## FULL LOAD DELIV. AT FULL LOAD STOP

### 1st version

Speed rpm : 1100

Del. quantity : 100.0...103.0

1000 : (98.0...105.0)

Spread cm3 : 3.50

1000 : (6.00)

## RATED SPEED

### 1st version

Setting point:

Speed rpm : 600

Rack travel in mm : 16.0

### Testing:

1st rack travel in: 10.00

Speed rpm : 1145...1160

2nd rack travel in: 4.00

Speed rpm : 1225...1255

## LOW IDLE 1

Setting point w/out bumper spring

Speed rpm : 250

Rack travel in mm : 6.4

Testing:

Speed rpm : 100  
Minimum rack travel: 7.90  
Speed rpm : 250  
Rack travel in mm : 6.30...6.50  
Rack travel in mm : 2.00  
Speed rpm : 370...410

TORQUE CONTROL

Dimension a mm : 0.65  
Torque control curve - 1st version  
1st speed rpm : 1100  
Rack travel in m: 11.00...11.10  
2nd speed rpm : 600  
Rack travel in m: 12.40...12.50  
3rd speed rpm : 870  
Rack travel in m: 12.00...12.20  
4th speed rpm : 955  
Rack travel in m: 11.20...11.50

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 500  
Del.quantity cm3/ : 107.5...111.5  
1000 s: (105.0...114.0)  
Speed rpm : 700  
Del.quantity cm3/ : 108.5...110.5  
1000 s: (106.0...113.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 10.00  
Speed rpm : 1145...1160

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 121.5...131.5  
1000 s: (118.5...134.5)  
Rack travel in mm : 13.00...13.60

Remarks:

:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MAN 11.1P23  
Edition : 11.12.87  
Replaces : 9.3.87  
Test oil : ISO-4113

Combination no. : 0 400 846 516

Injection pump  
Pump designation : PES6A95D41OLS2542  
EP type number : 0 410 896 936  
Governor  
Governor design. : RQV250...1100AB1177L  
Governor no. : 0 420 212 162

Customer-spec. information  
Customer : MAN

Engine : D2566 M/MF

1st version kW : 177.0  
Rated speed : 2200

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 000

Inlet press., bar : 1.00

Test nozzle holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter  
x Wall thickness  
x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values -----

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 1.50...1.60  
: (1.45...1.65)  
Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

## BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 12.00...12.10

Del. quantity cm<sup>3</sup>/ : 12.4...12.6

100 s: (12.2...12.8)

Spread cm<sup>3</sup> : 0.3

100 s: (0.6)

2nd speed rpm : 250.0

Rack travel in mm : 6.7...6.9

Del. quantity cm<sup>3</sup>/ : 0.9...1.4

100 s: (0.6...1.6)

Spread cm<sup>3</sup> : 0.3

100 s: (0.5)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1115

Rack travel in mm : 15.20...17.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100

Del. quantity : 124.5...126.5

1000 : (122.5...128.5)

Spread cm<sup>3</sup> : 3.50

1000 : (6.00)

## RATED SPEED

1st version

Control lever

position degrees: 43...51

Testing:

1st rack travel in: 11.00

Speed rpm : 1140...1150

2nd rack travel in: 4.00

Speed rpm : 1180...1210

4th rack travel in: 1300

Speed rpm : 0.00...1.00

# LOW IDLE 1

Control lever

position degrees: 9...17

## Testing:

Speed rpm : 100

Minimum rack travel: 8.20

Speed rpm : 250

Rack travel in mm : 6.70...6.90

Rack travel in mm : 2.00

Speed rpm : 335...395

## START CUT-OUT

Speed 1/min : 170 (190)

## FUEL DELIVERY CHARACTERISTICS

### 1st version

Speed rpm : 500

Del. quantity cm<sup>3</sup>/ : 107.5...113.5

1000 s: (105.0...116.0)

Speed rpm : 750

Del. quantity cm<sup>3</sup>/ : 113.0...116.0

1000 s: (110.5...118.5)

## BREAKAWAY

### 1st version

1mm rack travel less than

full load rack tr: 11.00

Speed rpm : 1140...1150

## STARTING FUEL DELIVERY

Speed rpm : 100

Del. quantity cm<sup>3</sup>/ : 121.5...131.5

1000 s: (118.5...134.5)

Rack travel in mm : 14.70...15.30

Remarks:

: MAN-NR. 2-7440

Set idle stop at 425 min -1 to a  
control-rod travel of 6.8 mm.

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MAN 11,1P20  
Edition : 11.12.87  
Replaces : 9.3.87  
Test oil : ISO-4113  
  
Combination no. : 0 400 846 518  
  
Injection pump  
Pump designation : PES6A95D41OLS2542  
EP type number : 0 410 896 936  
Governor  
Governor design. : RQV250...1100AB1177L  
Governor no. : 0 420 212 162

Customer-spec. information  
Customer : MAN

Engine : D2566 M/MF

1st version kW : 177.0  
Rated speed : 2200

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 000

Inlet press., bar : 1.00

Test nozzle holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter  
x Wall thickness  
x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values -----

## BEGINNING OF DELIVERY

Test pressure, bar : 25...27

Prestroke mm : 1.50...1.60  
: (1.45...1.65)

Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

## BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 12.00...12.10

Del. quantity cm<sup>3</sup>/ : 12.4...12.6

100 s : (12.2...12.8)

Spread cm<sup>3</sup> : 0.3

100 s : (0.6)

2nd speed rpm : 250.0

Rack travel in mm : 6.7...6.9

Del. quantity cm<sup>3</sup>/ : 0.9...1.4

100 s : (0.6...1.6)

Spread cm<sup>3</sup> : 0.3

100 s : (0.5)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 150

travel mm : 0.40...0.70

2nd speed rpm : 550

travel mm : 3.60...4.00

3rd speed rpm : 900

travel mm : 5.60...6.10

4th speed rpm : 1200

travel mm : 9.50...10.20

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1115

Rack travel in mm : 15.20...17.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100

Del. quantity : 124.5...126.5

1000 : (122.5...128.5)

Spread cm<sup>3</sup> : 3.50

1000 : (6.00)

## RATED SPEED

1st version  
Control lever  
position degrees: 43...51

Testing:  
1st rack travel in: 11.00  
Speed rpm : 1140...1150  
2nd rack travel in: 4.00  
Speed rpm : 1180...1210  
4th rack travel in: 1300  
Speed rpm : 0.00...1.00

LOW IDLE 1  
Control lever  
position degrees: 9...17

Testing:  
Speed rpm : 100  
Minimum rack travel: 8.20  
Speed rpm : 250  
Rack travel in mm : 6.70...6.90  
Rack travel in mm : 2.00  
Speed rpm : 335...395

TORQUE CONTROL  
Torque control curve - 1st version  
1st speed rpm : 1100  
Rack travel in m: 12.00...12.10  
2nd speed rpm : 500  
Rack travel in m: 12.00...12.20

#### START CUT-OUT

Speed 1/min : 170 (190)

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Speed rpm : 500  
Del.quantity cm<sup>3</sup>/ : 107.5...113.5  
1000 s: (105.0...116.0)  
Speed rpm : 750  
Del.quantity cm<sup>3</sup>/ : 113.0...116.0  
1000 s: (110.5...118.5)

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 11.00  
Speed rpm : 1140...1150

#### STARTING FUEL DELIVERY

Speed rpm : 100

B20

Del.quantity cm<sup>3</sup>/ : 121.5...131.5  
1000 s: (118.5...134.5)  
Rack travel in mm : 14.70...15.30

Remarks:  
: MAN-NR. 2-7441

Set idle stop at 425 min -1 to a  
control-rod travel of 6.8 mm.

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MAN 11.4 J  
 Edition : 11.12.87  
 Replaces : -  
 Test oil : ISO-4113

Combination no. : 0 400 846 528

Injection pump  
 Pump designation : PES6A9SD41QLS2639-1  
 EP type number : 0 410 896 920  
 Governor  
 Governor design. : RQV250...1100AB1177-2L  
 Governor no. : 0 420 212 174

Customer-spec. information  
 Customer : MAN

Engine : D2566MF

1st version kW : 162.0  
 Rated speed : 2200

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 000

Inlet press., bar : 1.00

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values -----

## BEGINNING OF DELIVERY

Test pressure, bar : 25...27

Prestroke mm : 1.50...1.60  
 : (1.45...1.55)

Rack travel in mm : 9.00...12.00  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

## BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 14.30...14.40

Del. quantity cm<sup>3</sup>/ : 13.0...13.2

100 s : (12.8...13.4)

Spread cm<sup>3</sup> : 0.3

100 s : (0.6)

2nd speed rpm : 250.0

Rack travel in mm : 7.6...7.8

Del. quantity cm<sup>3</sup>/ : 1.0...1.6

100 s : (0.7...1.8)

Spread cm<sup>3</sup> : 0.3

100 s : (0.5)

## (B) Setting of injection pump with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 200  
 travel mm : 0.70...0.90

2nd speed rpm : 800  
 travel mm : 5.20...5.50

3rd speed rpm : 1200  
 travel mm : 7.90...8.10

4th speed rpm : 1400  
 travel mm : 9.70...10.20

## GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -1

Speed rpm : 1260

Rack travel in mm : 15.20...17.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700

Del. quantity : 130.0...132.0

1000 : (128.0...134.0)

Spread cm<sup>3</sup> : 3.50

1000 : (6.00)

## RATED SPEED

1st version

Control lever

position degrees: 44...52

Testing:

1st rack travel in: 11.80

Speed rpm : 1140...1150

2nd rack travel in: 4.00

Speed rpm : 1275...1305

4th rack travel in: 1400

Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever

position degrees: 12...20

Testing:

Speed rpm : 100

Minimum rack travel: 9.00

Speed rpm : 250

Rack travel in mm : 7.40...7.60

CONSTANT REGULATION

Speed rpm : 320...440

TORQUE CONTROL

Dimension a mm : 1.45

Torque control curve - 1st version

1st speed rpm : 1100

Rack travel in m: 12.80...12.90

2nd speed rpm : 500

Rack travel in m: 14.30...14.40

3rd speed rpm : 875

Rack travel in m: 13.90...14.10

4th speed rpm : 965

Rack travel in m: 13.10...13.40

START CUT-OUT

Speed 1/min : 170 (190)

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 1100

Del. quantity cm<sup>3</sup>/ : 122.0...126.0

1000 s: (119.5...128.5)

Speed rpm : 500

Del. quantity cm<sup>3</sup>/ : 130.0...133.0

1000 s: (127.5...135.5)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.80

Speed rpm : 1140...1150

STARTING FUEL DELIVERY

Speed rpm : 100

Del. quantity cm<sup>3</sup>/ : 105.0...115.0

1000 s: (102.0...118.0)

Rack travel in mm : 15.20...15.40

Remarks:

:



# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MAN 11,4 B4  
Edition : 22.01.88  
Replaces : 12.9.86  
Test oil : ISO-4113

Combination no. : 0 400 846 532

Injection pump  
Pump designation : PES6A95D41QLS2639-1  
EP type number : 0 410 896 920  
Governor  
Governor design. : RQ250/1100AB1137-9L  
Governor no. : 0 420 200 091

Customer-spec. information  
Customer : MAN

Engine : D2566MF/220

1st version kW : 162.0  
Rated speed : 2200

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 000

Inlet press., bar : 1.00

Test nozzle holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter  
x Wall thickness  
x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values -----

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 1.50...1.60  
: (1.45...1.55)

Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

## BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 14.30...14.40

Del. quantity cm<sup>3</sup>/ : 13.0...13.2

100 s: (12.8...13.4)

Spread cm<sup>3</sup> : 0.3

100 s: (0.6)

2nd speed rpm : 250.0

Rack travel in mm : 7.4...7.6

Del. quantity cm<sup>3</sup>/ : 1.0...1.6

100 s: (0.7...1.8)

Spread cm<sup>3</sup> : 0.3

100 s: (0.5)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 600

Rack travel in mm : 15.60...16.40

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700

Del. quantity : 130.0...132.0

1000 : (128.0...134.0)

Spread cm<sup>3</sup> : 3.50

1000 : (6.00)

## RATED SPEED

1st version

Setting point:

Speed rpm : 600

Rack travel in mm : 16.0

Testing:

1st rack travel in: 11.80

Speed rpm : 1145...1160

2nd rack travel in: 4.00

Speed rpm : 1240...1270

4th rack travel in: 1350

Speed rpm : 0.00...1.00

#### LOW IDLE 1

Setting point w/out bumper spring

Speed rpm : 250

Rack travel in mm : 7.5

#### Testing:

Speed rpm : 100

Minimum rack trave: 8.90

Speed rpm : 250

Rack travel in mm : 7.40...7.60

Rack travel in mm : 2.00

Speed rpm : 390...430

#### TORQUE CONTROL

Dimension a mm : 0.60

Torque control curve - 1st version

1st speed rpm : 1100

Rack travel in m: 12.80...12.90

2nd speed rpm : 600

Rack travel in m: 14.30...14.40

3rd speed rpm : 865

Rack travel in m: 13.80...14.00

4th speed rpm : 940

Rack travel in m: 13.10...13.30

#### FUEL DELIVERY CHARACTERISTICS

##### 1st version

Speed rpm : 500

Del.quantity cm3/ : 130.0...133.0

1000 s: (127.5...135.5)

Speed rpm : 1100

Del.quantity cm3/ : 122.0...126.0

1000 s: (119.5...128.5)

#### BREAKAWAY

##### 1st version

1mm rack travel less than

full load rack tr: 11.80

Speed rpm : 1145...1160

#### STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/ : 105.0...115.0

1000 s: (102.0...118.0)

Remarks:

:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : KHD 6,1 P  
 Edition : 21.12.87  
 Replaces : -  
 Test oil : ISO-4113

Combination no. : 0 400 846 549

Injection pump  
 Pump designation : PES6A9SD41ORS2471  
 EP type number : 0 410 896 952  
 Governor  
 Governor design. : RQV300...1250AB1089-2L  
 Governor no. : 0 420 212 190

Customer-spec. information  
 Customer : KHD

Engine : BF6L913C

1st version kW : 141.0  
 Rated speed : 2500

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 000

Inlet press., bar : 1.00

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter  
 x Wall thickness  
 x Length mm : 6,00X2,00X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values -----

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 1.90...2.00  
 : (1.85...2.05)

Rack travel in mm : 9.00...12.00  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0 60-120-180-240-300

Tolerance + - ° : 0,50 (0,75)

## BASIC SETTING

1st speed rpm : 1250

Rack travel in mm : 11.60...11.70

Del. quantity cm<sup>3</sup>/ : 10.1...10.3

100 s: (9.9...10.5)

Spread cm<sup>3</sup> : 0.3

100 s: (0.6)

2nd speed rpm : 300

Rack travel in mm : 7.5...7.7

Del. quantity cm<sup>3</sup>/ : 1.0...1.6

100 s: (0.7...1.8)

Spread cm<sup>3</sup> : 0.3

100 s: (0.5)

(B) Setting of injection pump  
 with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 300

travel mm : 1.30...1.40

2nd speed rpm : 650

travel mm : 3.70...3.90

3rd speed rpm : 1200

travel mm : 6.90...7.10

4th speed rpm : 1290

travel mm : 8.40...8.50

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1290

Rack travel in mm : 15.20...17.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1250

Aneroid pressure h: 101.0

Del. quantity : ...103.0

1000 : (99.0...105.0)

Spread cm<sup>3</sup> : 3.50

1000 : (6.00)

## RATED SPEED

1st version  
Control lever  
position degrees: 69...77

Testing:  
1st rack travel in: 10.60  
Speed rpm : 1290...1300  
2nd rack travel in: 4.00  
Speed rpm : 1345...1375  
4th rack travel in: 1500  
Speed rpm : 0.00...1.00

LOW IDLE 1  
Control lever  
position degrees: 14...22

Testing:  
Speed rpm : 100  
Minimum rack travel: 9.00  
Speed rpm : 300  
Rack travel in mm : 7.50...7.70

CONSTANT REGULATION  
Speed rpm : 350...485

TORQUE CONTROL  
Dimension a mm : -  
Torque control curve - 1st version  
1st speed rpm : 1250  
Rack travel in m: 11.60...11.70  
2nd speed rpm : 500  
Rack travel in m: 11.60...11.80

#### START CUT-OUT

Speed 1/min : 220 (240)

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Speed rpm : 850  
Del. quantity cm<sup>3</sup>/ : 94.5...97.5  
1000 s: (92.0...100.0)

Remarks:

:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MMM 3,1 B 1  
 Edition : 11.12.87  
 Replaces : 2.11.87  
 Test oil : ISO-4113

Combination no. : 0 400 863 008

Injection pump  
 Pump designation : PES3A900320/3RS2658  
 EP type number : 0 410 893 004  
 Governor  
 Governor design. : RSV325...1500A2C505-2R  
 Governor no. : 0 420 233 196

Customer-spec. information  
 Customer : MMM

Engine : D226B-3

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 000

Inlet press., bar : 1.00

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values -----

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.95...3.05  
 : (2.90...3.10)

Rack travel in mm : 9.00...12.00

Firing order : 1- 2- 3

Phasing : 0-120-240

Tolerance + - ° : 0.50 (0.75)

## BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 9.00...0.00  
 & maximum rack tra: 21.00  
 Difference ° CS : 3.50...4.50

## BASIC SETTING

1st speed rpm : 1500

Rack travel in mm : 11.20...11.30

Del. quantity cm<sup>3</sup>/ : 8.9...9.0

100 s: (8.7...9.2)

Spread cm<sup>3</sup> : 0.3

100 s: (0.5)

2nd speed rpm : 325.0

Rack travel in mm : 10.0...10.2

Del. quantity cm<sup>3</sup>/ : 4.8...5.4

100 s: (4.6...5.6)

Spread cm<sup>3</sup> : 0.2

100 s: (0.4)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 2.50

## FULL LOAD DELIV. AT FULL LOAD STOP

### 1st version

Speed rpm : 1500

Del. quantity : 89.5...90.5

1000 : (87.5...92.5)

Spread cm<sup>3</sup> : 3.00

1000 : (5.00)

## RATED SPEED

### 1st version

Control lever

position degrees: 54...62

Testing:

1st rack travel in: 10.20

Speed rpm : 1540...1550

2nd rack travel in: 4.00  
Speed rpm : 1590...1620  
3rd rack travel in: 4.00  
Speed rpm : 595...1625  
4th rack travel in: 1765  
Speed rpm : 0.30...1.40

#### LOW IDLE 1

Control lever  
position degrees: 11...19  
Setting point w/out bumper spring  
Speed rpm : 325  
Rack travel in mm : 9.6

#### Testing:

Speed rpm : 100  
Minimum rack trave: 19.50  
Speed rpm : 325  
Rack travel in mm : 10.00...10.20  
Rack travel in mm : 2.00  
Speed rpm : 475...535

#### TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 1500  
Rack travel in m: 11.20...11.30  
2nd speed rpm : 500  
Rack travel in m: 11.20...11.40

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 10.20  
Speed rpm : 1540...1550

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 115.0...0.0  
1000 s: (112.0...0.0)  
Rack travel in mm : 16.80...0.00

Remarks:

;

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : KHD 1 G 3  
Edition : 09.03.87  
Replaces : 7.85  
Test oil : ISO-4113

Combination no. : 0 400 864 054

Injection pump  
Pump designation : PES4A8SD410/3RS2638  
EP type number : 0 410 884 950  
Governor  
Governor design. : RSV325...1150AOC2168  
L  
Governor no. : 0 420 232 364

Customer-spec. information  
Customer : KHD

Engine : BF4L913

1st version kW : 66.0  
Rated speed : 2300  
2nd version kW : 60.0  
Rated speed : 2300

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 000

Inlet press., bar : 1.00

Test nozzle holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter  
x Wall thickness  
x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values -----

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.50...2.60  
: (2.45...2.65)  
Rack travel in mm : 9.00...12.00  
Firing order : 1- 3- 4- 2

Phasing : 0-90-180-270

Tolerance + - ° : 0.50 (0.75)

## BASIC SETTING

1st speed rpm : 1110  
-----  
Rack travel in mm : 12.30...12.40  
-----  
Del. quantity cm3/ : 8.0...8.1  
-----  
100 s: (7.8...8.3)  
-----  
Spread cm3 : 0.3  
-----  
100 s: (0.4)  
-----

2nd speed rpm : 325.0  
Rack travel in mm : 8.1...8.3  
Del. quantity cm3/ : 0.9...1.5  
100 s: (0.7...1.7)  
Spread cm3 : 0.2  
100 s: (0.4)

## GUIDE SLEEVE POSITION

Control-lever position  
Degree: -3  
Speed rpm : 800  
Rack travel in mm : 0.30...0.70

Governor spring pre-tension  
Click setting x : 4.00

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
Speed rpm : 1110  
Del. quantity : 80.0...81.0  
1000 : (78.0...83.0)  
Spread cm3 : 3.00  
1000 : (4.50)

## RATED SPEED

1st version  
Control lever  
position degrees: 51...59

Testing:  
1st rack travel in: 11.30  
Speed rpm : 1155...1165  
2nd rack travel in: 4.00

Speed rpm : 1250...1280  
3rd rack travel in: 4.00  
Speed rpm : 1320...1350  
4th rack travel in: 1465  
Speed rpm : 0.30...1.40

#### LOW IDLE 1

Control lever  
position degrees: 27...35  
Setting point w/out bumper spring  
Speed rpm : 325  
Rack travel in mm : 7.7  
Speed rpm : 325  
Rack travel in mm : 7.60...7.80  
Rack travel in mm : 2.00  
Speed rpm : 700...760

#### TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 1110  
Rack travel in m: 12.30...12.40  
2nd speed rpm : 500  
Rack travel in m: 13.10...13.20  
4th speed rpm : 940  
Rack travel in m: 12.70...12.90

#### FUEL DELIVERY CHARACTERISTICS

##### 1st version

Speed rpm : 700  
Del. quantity cm<sup>3</sup>/ : 79.5...81.5  
1000 s: (77.0...84.0)

#### BREAKAWAY

##### 1st version

1mm rack travel less than

full load rack tr: 11.30  
Speed rpm : 1155...1165

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del. quantity cm<sup>3</sup>/ : 100.0...110.0  
1000 s: (97.0...113.0)  
Rack travel in mm : 16.80...17.20

#### Remarks:

: S29=DX 92=DX4.70 (1)  
: S28=DX 86=DX4.50 (2)

#### APPLICATION

Tractor (tractor engines)



# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : KHD 1 G 8  
 Edition : C9.03.87  
 Replaces : 5.84  
 Test oil : ISO-4113

Combination no. : 0 400 864 055

Injection pump  
 Pump designation : PES4A85D410/3RS2610  
 EP type number : 0 410 884 951  
 Governor  
 Governor design. : RSV325...1150A8C2163  
 L  
 Governor no. : 0 420 232 296

Customer-spec. information  
 Customer : KHD

Engine : F4L913

1st version kW : 55.0  
 Rated speed : 2300

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 000

Inlet press., bar : 1.00

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter  
 x Wall thickness : 6.00x2.00x600  
 x Length mm

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values -----

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.50...2.60  
 : (2.45...2.65)

Rack travel in mm : 9.00...12.00  
 Firing order : 1- 3- 4- 2

Phasing : 0-90-180-270

Tolerance + - ° : 0.50 (0.75)

## BASIC SETTING

1st speed rpm : 1150

Rack travel in mm : 11.30...11.40

Del.quantity cm3/ : 6.8...6.9

100 s: (6.6...7.1)

Spread cm3 : 0.3

100 s: (0.4)

2nd speed rpm : 325.0

Rack travel in mm : 9.1...9.3

Del.quantity cm3/ : 1.5...1.9

100 s: (1.3...2.1)

Spread cm3 : 0.2

100 s: (0.4)

## GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...1.00

Governor spring pre-tension

Click setting x : 4.50

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1150

Del.quantity : 68.0...69.0

1000 : (66.0...71.0)

Spread cm3 : 3.00

1000 : (4.50)

## RATED SPEED

1st version

Control lever

position degrees: 51...59

## Testing:

1st rack travel in: 10.30

Speed rpm : 1190...1200

2nd rack travel in: 4.00

Speed rpm : 1225...1255

3rd rack travel in: 4.00

Speed rpm : 1245...1275  
4th rack travel in: 1400  
Speed rpm : 0.30...1.40

APPLICATION  
Tractor (tractor engines)

#### LOW IDLE 1

Control lever  
position degrees: 15...23  
Setting point w/out bumper spring  
Speed rpm : 325  
Rack travel in mm : 8.7

#### Testing:

Speed rpm : 100  
Minimum rack travel: 19.50  
Speed rpm : 325  
Rack travel in mm : 9.10...9.30  
Rack travel in mm : 2.00  
Speed rpm : 470...530

#### TORQUE CONTROL

Dimension a mm : 0.80  
Torque control curve - 1st version  
1st speed rpm : 1150  
Rack travel in m: 11.30...11.40  
2nd speed rpm : 500  
Rack travel in m: 12.10...12.20  
3rd speed rpm : 800  
Rack travel in m: 11.80...12.00  
4th speed rpm : 900  
Rack travel in m: 11.60...11.80

#### FUEL DELIVERY CHARACTERISTICS

##### 1st version

Speed rpm : 500  
Del. quantity cm<sup>3</sup>/ : 58.0...61.0  
1000 s: (55.5...63.5)  
Spread cm<sup>3</sup> : -  
1000 s: (5.50)

#### BREAKAWAY

##### 1st version

1mm rack travel less than

full load rack tr: 10.30  
Speed rpm : 1190...1200

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del. quantity cm<sup>3</sup>/ : 130.0...140.0  
1000 s: (127.0...143.0)  
Rack travel in mm : 19.50...21.00

#### Remarks:

: S16 = DX 80 = D4.30

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MM 6,2 E 5  
 Edition : 11.12.87  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 400 866 121  
 Injection pump  
 Pump designation : PES6A90D320/3RS2660  
 EP type number : 0 410 896 078  
 Governor  
 Governor design. : RSV325...1100AOC2182  
 -2R  
 Governor no. : 0 420 233 211

Customer-spec. information  
 Customer : MM

Engine : TD226B-6

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42  
 Overflow valve : 1 417 413 000

Inlet press., bar : 1.00

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00x2.00x600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values -----

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.95...3.05  
 : (2.90...3.10)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : -1

## BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 8.50...9.50  
 & maximum rack tra: 21.00  
 Difference ° CS : 3.50...4.50

## BASIC SETTING

1st speed rpm : 1100  
 -----  
 Rack travel in mm : 10.50...10.60  
 -----  
 Del. quantity cm<sup>3</sup>/ : 8.9...9.0  
 -----  
 100 s: (8.7...9.2)  
 -----  
 Spread cm<sup>3</sup> : 0.3  
 -----  
 100 s: (0.5)  
 -----  
 2nd speed rpm : 325.0  
 Rack travel in mm : 7.0...7.2  
 Del. quantity cm<sup>3</sup>/ : 2.2...2.8  
 100 s: (2.0...3.0)  
 Spread cm<sup>3</sup> : 0.2  
 100 s: (0.4)

## GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -3  
 Speed rpm : 800  
 Rack travel in mm : 0.30...0.70

Governor spring pre-tension  
 Click setting x : 4.00

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 1100  
 Aneroid pressure h: 700  
 Del. quantity : 89.5...90.5  
 1000 : (87.5...92.5)  
 Spread cm<sup>3</sup> : 3.00  
 1000 : (5.00)

## RATED SPEED

1st version  
 Control lever  
 position degrees: 41...49

### Testing:

1st rack travel in: 9.50  
Speed rpm : 1140...1150  
2nd rack travel in: 4.00  
Speed rpm : 1170...1200  
3rd rack travel in: 4.00  
Speed rpm : 1210...1240  
4th rack travel in: 1380  
Speed rpm : 0.30...1.40

### LOW IDLE 1

Control lever  
position degrees: 18...26  
Setting point w/out bumper spring  
Speed rpm : 325  
Rack travel in mm : 6.6

### Testing:

Speed rpm : 100  
Minimum rack travel: 19.50  
Speed rpm : 325  
Rack travel in mm : 7.00...7.20  
Rack travel in mm : 2.00  
Speed rpm : 515...575

### TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 1100  
Rack travel in m: 10.50...10.60  
2nd speed rpm : 500  
Rack travel in m: 10.50...10.70

Aneroid/Altitude  
Compensator Test

### 1st version

Setting  
Speed rpm : 500  
Rack travel in mm : 700  
Contr.-rod trav.mm: 10.50...10.60

### Measurement

Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 9.60...9.70  
2nd pressure hPa : 250  
Rack travel in m: 10.10...10.20  
3rd pressure hPa : 200  
Rack travel in m: 9.80...10.00

### FUEL DELIVERY CHARACTERISTICS

### 1st version

Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 64.0...66.0  
1000 s: (62.0...68.0)

### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 9.50  
Speed rpm : 1140...1150

### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 130.0...140.0  
1000 s: (127.0...143.0)  
Rack travel in mm : 19.50...21.00

Remarks:

### APPLICATION

Tractor (tractor engines)

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MWM 6,2 E 6  
 Edition : 18.12.87  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 400 866 122  
 Injection pump  
 Pump designation : PES6A90D320/3RS2660  
 EP type number : 0 410 896 078  
 Governor  
 Governor design. : RSV325...1200A0C2182  
 -3R  
 Governor no. : 0 420 233 212

Customer-spec. information  
 Customer : MWM

Engine : TD226B-6

1st version kW : 123.0  
 Rated speed : 2400

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 000

Inlet press., bar : 1.00

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values -----

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.95...3.05  
 : (2.90...3.10)

Rack travel in mm : 9.00...12.00  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : -1

## BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 8.50...9.50  
 & maximum rack tra: 21.00  
 Difference ° CS : 3.50...4.50

## BASIC SETTING

1st speed rpm : 1180

Rack travel in mm : 11.60...11.70

Del. quantity cm<sup>3</sup>/ : 8.9...9.0

100 s: (8.9...9.2)

Spread cm<sup>3</sup> : 0.4

100 s: (0.4)

2nd speed rpm : 325.0

Rack travel in mm : 7.1...7.3

Del. quantity cm<sup>3</sup>/ : 1.0...1.6

100 s: (0.8...1.8)

Spread cm<sup>3</sup> : 0.2

100 s: (0.4)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 3.00

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1180

Aneroid pressure h: 700

Del. quantity : 89.0...90.0

1000 : (87.0...92.0)

Spread cm<sup>3</sup> : 3.00

1000 : (4.50)

## RATED SPEED

1st version

Control lever  
position degrees: 40...48

Testing:

1st rack travel in: 10.60  
Speed rpm : 1220...1230  
2nd rack travel in: 4.00  
Speed rpm : 1240...1270  
3rd rack travel in: 4.00  
Speed rpm : 1260...1290  
4th rack travel in: 1435  
Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever  
position degrees: 13...21  
Setting point w/out bumper spring  
Speed rpm : 325  
Rack travel in mm : 6.7

Testing:

Speed rpm : 100  
Minimum rack travel: 19.50  
Speed rpm : 325  
Rack travel in mm : 7.10...7.30  
Rack travel in mm : 2.00  
Speed rpm : 485...545

TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 1180  
Rack travel in m: 11.60...11.70  
2nd speed rpm : 500  
Rack travel in m: 12.40...12.50  
4th speed rpm : 890  
Rack travel in m: 12.00...12.20

Aneroid/Altitude  
Compensator Test

1st version

Setting  
Speed rpm : 500  
Rack travel in mm : 700  
Contr.-rod trav.mm: 12.40...12.50

Measurement

Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 10.40...10.50  
2nd pressure hPa : 400  
Rack travel in m: 11.70...11.80  
3rd pressure hPa : 210  
Rack travel in m: 10.90...11.10

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 700  
Speed rpm : 600  
Del.quantity cm3/ : 92.0...94.0  
1000 s: (89.5...96.5)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 59.5...61.5  
1000 s: (57.5...63.5)

BREAKAWAY

1st version

1mm rack travel less than  
full load rack tr: 10.60  
Speed rpm : 1220...1230

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 128.0...138.0  
1000 s: (125.0...141.0)  
Rack travel in mm : 19.50...21.00

Remarks:

:

APPLICATION

Tractor (tractor engines)

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MWM 6,2 E 7  
Edition : 18.12.87  
Replaces : -  
Test oil : ISO-4113  
Combination no. : 0 400 866 123  
Injection pump  
Pump designation : PES6A90D320/3RS2660  
EP type number : 0 410 896 078  
Governor  
Governor design. : RSV325...1200AOC2182  
-4R  
Governor no. : 0 420 233 213

Customer-spec. information  
Customer : MWM

Engine : TD226B-6

1st version kW : 107.0  
Rated speed : 2400

## TEST BENCH REQUIREMENTS

Test oil  
inlet temperature, °C : 38...42

Overflow valve : 1 417 413 000

Inlet pressure, bar : 1.00

Test nozzle holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter  
x Wall thickness  
x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values -----

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.95...3.05  
: (2.90...3.10)

Rack travel in mm : 9.00...12.00  
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : -1

## BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 8.50...9.50  
& maximum rack tra: 21.00  
Difference ° CS : 3.50...4.50

## BASIC SETTING

1st speed rpm : 1200

Rack travel in mm : 10.20...10.30

Del. quantity cm<sup>3</sup>/ : 7.7...7.8

100 s: (7.5...8.0)

Spread cm<sup>3</sup> : 0.3

100 s: (0.5)

2nd speed rpm : 325.0

Rack travel in mm : 7.0...7.2

Del. quantity cm<sup>3</sup>/ : 1.0...1.6

100 s: (0.8...1.8)

Spread cm<sup>3</sup> : 0.2

100 s: (0.4)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 3.50

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1200

Aneroid pressure h: 700

Del. quantity : 77.5...78.5

1000 : (75.5...80.5)

Spread cm<sup>3</sup> : 3.00

1000 : (5.00)

## RATED SPEED

1st version

Control lever  
position degrees: 44...52

Testing:

1st rack travel in: 9.20  
Speed rpm : 1240...1250  
2nd rack travel in: 4.00  
Speed rpm : 1265...1295  
3rd rack travel in: 4.00  
Speed rpm : 1290...1320  
4th rack travel in: 1455  
Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever  
position degrees: 17...25  
Setting point w/out bumper spring  
Speed rpm : 325  
Rack travel in mm : 6.6

Testing:

Speed rpm : 100  
Minimum rack travel: 19.50  
Speed rpm : 325  
Rack travel in mm : 7.00...7.20  
Rack travel in mm : 2.00  
Speed rpm : 505...565

TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 1200  
Rack travel in m: 10.20...10.30  
2nd speed rpm : 500  
Rack travel in m: 11.00...11.10  
4th speed rpm : 1010  
Rack travel in m: 10.60...10.80

Aneroid/Altitude  
Compensator Test

1st version

Setting  
Speed rpm : 500  
Rack travel in mm : 700  
Contr.-rod trav.mm: 11.10...11.20

Measurement

Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 10.20...10.30  
2nd pressure hPa : 250  
Rack travel in m: 10.80...10.90  
3rd pressure hPa : 180  
Rack travel in m: 10.40...10.60

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 700  
Speed rpm : 600  
Del.quantity cm3/ : 75.5...77.5  
1000 s: (73.0...80.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 61.0...62.0  
1000 s: (58.0...64.0)

BREAKAWAY

1st version

1mm rack travel less than  
full load rack tr: 9.20  
Speed rpm : 1240...1250

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 128.0...138.0  
1000 s: (125.0...141.0)  
Rack travel in mm : 19.50...21.00

Remarks:

APPLICATION

Tractor (tractor engines)



# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB 5,7 M 10  
 Edition : 11.12.87  
 Replaces : 12.9.86  
 Test oil : ISO-4113

Combination no. : 0 400 876 188

Injection pump  
 Pump designation : PES6A80D41ORS2085X  
 EP type number : 0 410 886 045  
 Governor  
 Governor design. : RSV350...1400A2C1052  
 L  
 Governor no. : 0 420 232 406

Customer-spec. information  
 Customer : DAIMLER-BENZ

Engine : OM352

1st version kW : 80.9  
 Rated speed : 2800

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 000

Inlet press., bar : 1.00

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter  
 x Wall thickness : 6.00X2.00X600  
 x Length mm

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values -----

## BEGINNING OF DELIVERY

Prestroke mm : 2.15...2.25  
 : (2.10...2.30)  
 Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

## BASIC SETTING

1st speed rpm : 1400

Rack travel in mm : 9.00...9.10

Del. quantity cm<sup>3</sup>/ : 5.2...5.3

100 s : (5.0...5.4)

Spread cm<sup>3</sup> : 0.2

100 s : (0.4)

2nd speed rpm : 350.0

Rack travel in mm : 6.6...7.2

Del. quantity cm<sup>3</sup>/ : 1.0...1.2

100 s : (0.8...1.3)

Spread cm<sup>3</sup> : 0.2

100 s : (0.3)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 4.00

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1400

Del. quantity : 52.0...53.0

1000 : (50.5...54.5)

Spread cm<sup>3</sup> : 2.50

1000 : (4.00)

## RATED SPEED

1st version

Control lever

position degrees: 48...56

Testing:

1st rack travel in: 8.00

Speed rpm : 1450...1455

2nd rack travel in: 4.00

Speed rpm : 1488...1510

3rd rack travel in: 4.00

Speed rpm : 1500...1530

4th rack travel in: 1680  
Speed rpm : 0.30...1.40

LOW IDLE 1  
Control lever  
position degrees: -3

Testing:  
Speed rpm : 100  
Minimum rack trave: 19.00  
Rack travel in mm : 2.00  
Speed rpm : 600...660

TORQUE CONTROL  
Torque control curve - 1st version  
1st speed rpm : 1400  
Rack travel in m: 9.00...9.10  
2nd speed rpm : 500  
Rack travel in m: 9.80...9.90  
3rd speed rpm : 850  
4th speed rpm : 950  
Rack travel in m: 9.10...9.40

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Speed rpm : 500  
Del.quantity cm3/ : 47.0...49.0  
1000 s: (45.0...51.0)  
Speed rpm : 850  
Del.quantity cm3/ : 50.0...53.0  
1000 s: (48.0...55.0)

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 78.0...88.0  
1000 s: (75.0...91.0)  
Rack travel in mm : 14.20...14.60

#### LOW IDLE

Speed rpm : 350  
Rack travel in mm : 6.60...7.20  
Del.quantity cm3/ : 10.0...12.0  
1000 s: (8.5...13.5)  
Spread cm3 : 2.00  
1000 s: (3.50)

Remarks:

:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : KHD 6,1 E 4  
Edition : 24.11.87  
Replaces : -  
Test oil : ISO-4113  
Combination no. : 0 400 876 241  
Injection pump  
Pump designation : PES6A9SD41ORS2471  
EP type number : 0 410 896 952  
Governor  
Governor design. : RSV325...1400A8C707L  
Governor no. : 0 420 232 336

Customer-spec. information  
Customer : KHD

Engine : BF6L913C

1st version kW : 140.0  
Rated speed : 2800

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 000

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter  
x Wall thickness  
x Length mm : 6,00X2,00X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values -----

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 1.90...2.00  
: (1.85...2.05)

Rack travel in mm : 9.00...12.00

Firing order :

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

## BASIC SETTING

1st speed rpm : 1400

Rack travel in mm : 9.20...9.30

Del. quantity cm<sup>3</sup>/ : 8.5...8.7

100 s: (8.3...8.9)

Spread cm<sup>3</sup> : 0.35

100 s: (0.6)

2nd speed rpm : 325

Rack travel in mm : 6.40...6.60

Del. quantity cm<sup>3</sup>/ : 1.0...1.6

100 s: (0.7...1.8)

Spread cm<sup>3</sup> : 0.35

100 s: (0.55)

## GUIDE SLEEVE POSITION

Control-lever position  
Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 4.50

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1400

Aneroid pressure h: 700

Del. quantity : 85.5...87.5

1000 : (83.5...89.5)

Spread cm<sup>3</sup> : 3.5

1000 : (6.0)

## RATED SPEED

1st version

Control lever

position degrees: 62...70

Testing:

1st rack travel in: 8.20

Speed rpm : 1440...1450

2nd rack travel in: 4.00

Speed rpm : 1460...1490

3rd rack travel in: 4.00  
Speed rpm : 1480...1510  
4th rack travel in: 1645  
Speed rpm : 0.30...1.40

#### LOW IDLE 1

Control lever  
position degrees: 14...22  
Setting point w/out bumper spring  
Speed rpm : 325  
Rack travel in mm : 6.00  
Speed rpm : 325  
Rack travel in mm : 6.40...6.60  
Rack travel in mm : 2.00  
Speed rpm : 560...620

#### TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 1400  
Rack travel in m: 9.20...9.30  
2nd speed rpm : 500  
Rack travel in m: 10.50...10.60  
3rd speed rpm : 1050  
Rack travel in m: 9.80...10.00

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 8.20  
Speed rpm : 1440...1450

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del. quantity cm3/ : 116.0...126.0  
1000 s: (113.0...129.0)

Remarks:

:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB 5,7 Q 14  
 Edition : 11.12.87  
 Replaces : 17.12.86  
 Test oil : ISO-4113

Combination no. : 0 400 876 255

Injection pump  
 Pump designation : PES6A90D410RS2293  
 EP type number : 0 410 896 031  
 Governor  
 Governor design. : RSV350...1300AOC783L  
 Governor no. : 0 420 232 409

Customer-spec. information  
 Customer : DAIMLER-N-BENZ

Engine : OM 352 A

1st version kW : 110.3  
 Rated speed : 2600

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve  
 : 1 417 413 000

Inlet press., bar : 1.00

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00x2.00x600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values -----

## BEGINNING OF DELIVERY

Test pressure, bar : 25...27

Prestroke mm : 2.15...2.25  
 : (2.10...2.30)

Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

## BASIC SETTING

1st speed rpm : 1300

Rack travel in mm : 11.40...11.50

Del. quantity cm<sup>3</sup>/ : 7.5...7.6

100 s : (7.3...7.8)

Spread cm<sup>3</sup> : 0.3

100 s : (0.4)

2nd speed rpm : 350.0

Rack travel in mm : 7.1...7.7

Del. quantity cm<sup>3</sup>/ : 1.0...1.2

100 s : (0.8...1.4)

Spread cm<sup>3</sup> : 0.2

100 s : (0.4)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...1.00

Governor spring pre-tension

Click setting x : 5.50

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1300

Aneroid pressure h : 700

Del. quantity : 75.5...76.5

1000 : (73.5...78.5)

Spread cm<sup>3</sup> : 3.00

1000 : (4.50)

## RATED SPEED

1st version

Control lever

position degrees: 63...71

Testing:

1st rack travel in: 10.40

Speed rpm : 1340...1345

2nd rack travel in: 4.00

Speed rpm : 1393...1406

3rd rack travel in: 4.00

Speed rpm : 1430...1460  
4th rack travel in: 1600  
Speed rpm : 0.30...1.70  
5th rack travel in: 1345...1355  
Speed rpm : 10.40

LOW IDLE 1  
Control lever  
position degrees: -3

Testing:  
Speed rpm : 100  
Minimum rack travel: 19.00  
Rack travel in mm : 2.00  
Speed rpm : 460...520

TORQUE CONTROL  
Torque control curve - 1st version  
1st speed rpm : 1300  
Rack travel in m: 11.40...11.50  
3rd speed rpm : 800  
Rack travel in m: 11.40...11.60  
4th speed rpm : 1050  
Rack travel in m: 11.40...11.60

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 500  
Rack travel in mm : 700  
Contr.-rod trav.mm: 11.50...11.60

Measurement  
Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 10.60...10.70  
2nd pressure hPa : 390  
Rack travel in m: 11.40...11.50  
3rd pressure hPa : 275  
Rack travel in m: 10.80...11.00

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: 700  
Speed rpm : 500  
Del.quantity cm3/ : 62.0...64.0  
1000 s: (59.5...66.5)  
Spread cm3 : -  
1000 s: (5.5)  
Aneroid pressure h: 700  
Speed rpm : 800  
Del.quantity cm3/ : 67.0...69.0  
1000 s: (64.5...71.5)

Spread cm3 : -  
1000 s: (5.50)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 50.0...52.0  
1000 s: (47.5...54.5)  
Spread cm3 : -  
1000 s: (5.50)

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 78.0...88.0  
1000 s: (75.0...91.0)  
Rack travel in mm : 15.10...15.50

#### LOW IDLE

Speed rpm : 350  
Rack travel in mm : 7.10...7.70  
Del.quantity cm3/ : 10.0...12.0  
1000 s: (8.0...14.0)  
Spread cm3 : 2.50  
1000 s: (4.50)

Remarks:

:  
Hydraulic latching of starting  
delivery.

Latching at 0.4 bar ... 0.5 bar.

Unlatching at 0.15 bar...0.25 bar.

APPLICATION  
Unimog

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : KHD 6,1 D 4  
Edition : 11.12.87  
Replaces : 12.11.87  
Test oil : ISO-4113

Combination no. : 0 400 876 270

Injection pump  
Pump designation : PES6A8SD41ORS2537  
EP type number : 0 410 886 908  
Governor  
Governor design. : RSV325...1150A8C2020  
L  
Governor no. : 0 420 232 345

Customer-spec. information  
Customer : KHD

Engine : BF6L913

1st version kW : 106.6  
Rated speed : 2300

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 000

Inlet press., bar : 1.00

Test nozzle holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter  
x Wall thickness  
x Length mm : 6.00x2.00x600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values -----

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 1.90...2.00  
: (1.85...2.05)

Rack travel in mm : 9.00...12.00  
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

## BASIC SETTING

1st speed rpm : 1150

Rack travel in mm : 11.00...11.10

Del. quantity cm<sup>3</sup>/ : 7.9...8.1

100 s: (7.7...8.3)

Spread cm<sup>3</sup> : 0.3

100 s: (0.4)

2nd speed rpm : 325.0

Rack travel in mm : 6.8...7.0

Del. quantity cm<sup>3</sup>/ : 0.9...1.5

100 s: (0.7...1.7)

Spread cm<sup>3</sup> : 0.2

100 s: (0.4)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 6.00

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1150

Aneroid pressure h: 700

Del. quantity : 79.5...81.5

1000 : (77.5...83.5)

Spread cm<sup>3</sup> : 3.00

1000 : (4.50)

## RATED SPEED

1st version

Control lever

position degrees: 56...64

Testing:

1st rack travel in: 10.00

Speed rpm : 1190...1200

2nd rack travel in: 4.00

Speed rpm : 1240...1270

3rd rack travel in: 4.00  
Speed rpm : 1270...1300  
4th rack travel in: 1435  
Speed rpm : 0.30...1.40

#### LOW IDLE 1

Control lever  
position degrees: 20...28  
Setting point w/out bumper spring  
Speed rpm : 325  
Rack travel in mm : 6.4

#### Testing:

Speed rpm : 100  
Minimum rack travel: 19.50  
Speed rpm : 325  
Rack travel in mm : 6.80...7.00  
Rack travel in mm : 2.00  
Speed rpm : 590...650

#### TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 1150  
Rack travel in m: 11.00...11.10  
2nd speed rpm : 960  
Rack travel in m: 11.70...11.90  
3rd speed rpm : 500  
Rack travel in m: 12.50...12.60

#### Aneroid/Altitude Compensator Test

#### 1st version

Setting  
Speed rpm : 500  
Rack travel in mm : 700  
Contr.-rod trav.mm: 12.50...12.60

#### Measurement

Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 10.60...10.70  
2nd pressure hPa : 350  
Rack travel in m: 12.10...12.20  
3rd pressure hPa : 150  
Rack travel in m: 11.10...11.40

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: 700  
Speed rpm : 850  
Del.quantity cm<sup>3</sup>/ : 88.0...91.0  
1000 s: (86.0...93.0)  
Aneroid pressure h: -  
Speed rpm : 500

Del.quantity cm<sup>3</sup>/ : 60.0...63.0  
1000 s: (58.0...65.0)

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 10.00  
Speed rpm : 1190...1200

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 120.0...130.0  
1000 s: (117.0...133.0)  
Rack travel in mm : 17.40...18.00

#### Remarks:

:  
Test electrically-released starting  
quantity (EES) with 12 volts

#### APPLICATION

Tractor (tractor engines)



# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB 5,7 x 9  
 Edition : 11.12.87  
 Replaces : 12.9.86  
 Test oil : ISO-4113  
 Combination no. : 0 400 876 311  
 Injection pump  
 Pump designation : PES6A90D410RS2569  
 EP type number : 0 410 896 071  
 Governor  
 Governor design. : RSV350...1250AOC1130  
 -1L  
 Governor no. : 0 420 232 427

Customer-spec. information  
 Customer : DAIMLER-BENZ

Engine : OM 352

1st version kW : 92.0  
 Rated speed : 2500

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve  
 : 1 417 413 000

Inlet press., bar : 1.00

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00x2.00x600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values -----

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.25...2.35  
 : (2.20...2.40)

Rack travel in mm : 9.00...12.00  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

## BASIC SETTING

1st speed rpm : 1250

Rack travel in mm : 11.50...11.60

Del. quantity cm<sup>3</sup>/ : 6.7...6.8

100 s: (6.5...7.0)

Spread cm<sup>3</sup> : 0.3

100 s: (0.4)

2nd speed rpm : 350.0

Rack travel in mm : 8.1...8.7

Del. quantity cm<sup>3</sup>/ : 1.0...1.2

100 s: (0.8...1.4)

Spread cm<sup>3</sup> : 0.2

100 s: (0.4)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...1.00

Governor spring pre-tension

Click setting x : 5.25

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1250

Del. quantity : 67.0...68.0

1000 : (65.0...70.0)

Spread cm<sup>3</sup> : 3.00

1000 : (4.50)

## RATED SPEED

1st version

Control lever

position degrees: 59...67

Testing:

1st rack travel in: 10.50

Speed rpm : 1290...1295

2nd rack travel in: 4.00

Speed rpm : 1347...1360

3rd rack travel in: 4.00

Speed rpm : 1405...1445  
4th rack travel in: 1550  
Speed rpm : 0.30...1.70

LOW IDLE 1  
Control lever  
position degrees: -3

Testing:  
Speed rpm : 100  
Minimum rack trave: 19.00  
Rack travel in mm : 2.00  
Speed rpm : 560...620

TORQUE CONTROL  
Torque control curve - 1st version  
1st speed rpm : 1250  
Rack travel in m: 11.50...11.60  
2nd speed rpm : 600  
Rack travel in m: 11.90...12.00  
3rd speed rpm : 1050  
Rack travel in m: 11.50...11.70

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Speed rpm : 600  
Del.quantity cm3/ : 56.0...58.0  
1000 s: (53.5...60.5)  
Speed rpm : 850  
Del.quantity cm3/ : 63.0...65.0  
1000 s: (60.5...67.5)

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 78.0...88.0  
1000 s: (75.0...91.0)  
Rack travel in mm : 16.10...16.50

#### LOW IDLE

Speed rpm : 350  
Rack travel in mm : 8.10...8.70  
Del.quantity cm3/ : 10.0...12.0  
1000 s: (8.0...14.0)  
Spread cm3 : 2.50  
1000 s: (4.50)

Remarks:

;

APPLICATION  
Unimog

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB 6,0 C 2  
Edition : 11.12.87  
Replaces : 13.5.87  
Test oil : ISO-4113  
  
Combination no. : 0 400 876 335  
  
Injection pump  
Pump designation : PES6A90D41ORS2710  
EP type number : 0 410 896 082  
Governor  
Governor design. : RSV350...1200A1C1154  
L  
Governor no. : 0 420 232 468

Customer-spec. information  
Customer : DAIMLER-BENZ

Engine : OM 366

1st version kW : 74.0  
Rated speed : 2400

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 000

Inlet press., bar : 1.00

Test nozzle holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
x Wall thickness  
x Length mm : 6.00x1.50x600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values -----

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.25...2.35  
: (2.20...2.40)

Rack travel in mm : 9.00...12.00  
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

## BASIC SETTING

1st speed rpm : 1200

Rack travel in mm : 9.30...9.40

Del. quantity cm3/ : 5.1...5.2

100 s: (4.9...5.4)

Spread cm3 : 0.3

100 s: (0.4)

2nd speed rpm : 350.0

Rack travel in mm : 8.0...8.6

Del. quantity cm3/ : 1.0...1.2

100 s: (0.8...1.4)

Spread cm3 : 0.2

100 s: (0.4)

## GUIDE SLEEVE POSITION

Governor spring pre-tension  
Click setting x : 5.00

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1200

Del. quantity : 51.0...52.0

1000 : (49.0...54.0)

Spread cm3 : 3.00

1000 : (4.50)

## RATED SPEED

1st version

Control lever  
position degrees: 59...67

## Testing:

1st rack travel in: 8.30

Speed rpm : 1240...1245

2nd rack travel in: 4.00

Speed rpm : 1261...1274

3rd rack travel in: 4.00

Speed rpm : 1300...1330

4th rack travel in: 1400

Speed rpm : 0.30...1.40

5th rack travel in: 1255...1265

Speed rpm : 8.30

LOW IDLE 1

Control lever  
position degrees: -3

Testing:

Speed rpm : 100  
Minimum rack travel: 19.50  
Rack travel in mm : 2.00  
Speed rpm : 465...525

TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 1200  
Rack travel in m: 9.30...9.40  
2nd speed rpm : 600  
Rack travel in m: 10.30...10.50  
3rd speed rpm : 900  
Rack travel in m: 9.80...10.10

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 600  
Del. quantity cm<sup>3</sup>/ : 41.0...43.0  
1000 s: (38.5...45.5)  
Speed rpm : 900  
Del. quantity cm<sup>3</sup>/ : 46.0...49.0  
1000 s: (43.5...51.5)

STARTING FUEL DELIVERY

Speed rpm : 100  
Del. quantity cm<sup>3</sup>/ : 78.0...88.0  
1000 s: (75.0...91.0)  
Rack travel in mm : 16.80...17.20

LOW IDLE

Speed rpm : 350  
Rack travel in mm : 8.00...8.60  
Del. quantity cm<sup>3</sup>/ : 10.0...12.0  
1000 s: (8.0...14.0)  
Spread cm<sup>3</sup> : 2.50  
1000 s: (4.50)

Remarks:

:

APPLICATION

Unimog

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : KHD 1 0 1  
Edition : 07.01.88  
Replaces : 2.11.87  
Test oil : ISO-4113

Combination no. : 0 400 876 344

Injection pump  
Pump designation : PES6A95D41ORS2625  
EP type number : 0 410 896 926  
Governor  
Governor design. : RSV325...1250A2C1159  
Governor no. : 0 420 232 490

Customer-spec. information  
Customer : KHD

Engine : BF6L913C

1st version kW : 130.0  
Rated speed : 2500

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve  
: 1 417 413 000

Inlet press., bar : 1.00

Test nozzle holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter  
x Wall thickness  
x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values -----

## BEGINNING OF DELIVERY

Test pressure, bar : 25...27

Prestroke mm : 1.90...2.00  
: (1.85...2.05)

Rack travel in mm : 9.00...12.00  
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

## BASIC SETTING

1st speed rpm : 1250

Rack travel in mm : 11.10...11.20

Del. quantity cm<sup>3</sup>/ : 8.9...9.0

100 s : (8.7...9.2)

Spread cm<sup>3</sup> : 0.3

100 s : (0.6)

2nd speed rpm : 350.0

Rack travel in mm : 6.4...6.6

Del. quantity cm<sup>3</sup>/ : 1.0...1.6

100 s : (0.7...1.8)

Spread cm<sup>3</sup> : 0.3

100 s : (0.5)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 3.00

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1250

Aneroid pressure h : 900

Del. quantity : 89.0...90.0

1000 : (87.0...92.0)

Spread cm<sup>3</sup> : 3.50

1000 : (6.00)

## RATED SPEED

1st version

Control lever

position degrees: 40...48

Testing:

1st rack travel in: 10.10

Speed rpm : 1290...1300

2nd rack travel in: 4.00

Speed rpm : 1320...1350

3rd rack travel in: 4.00  
Speed rpm : 1345...1375  
4th rack travel in: 1540  
Speed rpm : 0.30...1.40

#### LOW IDLE 1

Control lever  
position degrees: 13...21  
Setting point w/out bumper spring  
Speed rpm : 350  
Rack travel in mm : 5.0

#### Testing:

Speed rpm : 100  
Minimum rack travel: 19.50  
Speed rpm : 350  
Rack travel in mm : 5.40...5.60  
Rack travel in mm : 2.00  
Speed rpm : 515...565

#### TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 1250  
Rack travel in m: 11.10...11.20  
2nd speed rpm : 500  
Rack travel in m: 11.10...11.30

Aneroid/Altitude  
Compensator Test

#### 1st version

Setting  
Speed rpm : 500  
Rack travel in mm : 900  
Contr.-rod trav.mm: 11.10...11.20

#### Measurement

Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 10.20...10.30  
2nd pressure hPa : 400  
Rack travel in m: 10.90...11.00  
3rd pressure hPa : 330  
Rack travel in m: 10.50...10.70

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm<sup>3</sup>/ : 54.0...56.0  
1000 s: (52.0...58.0)

#### RACK STOP ADJUSTMENT

Speed rpm : 500

C24

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 10.10  
Speed rpm : 1290...1300

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 120.0...130.0  
1000 s: (117.0...133.0)  
Rack travel in mm : 17.10...17.30

Remarks:

#### APPLICATION

Combine-harvester

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : DEE 7,6 H11  
 Edition : 14.01.88  
 Replaces : 6.11.87  
 Test oil : ISO-4113

Combination no. : 0 400 876 347

Injection pump  
 Pump designation : PES6A100D41ORS2676  
 EP type number : 9 410 230 023  
 Governor  
 Governor design. : RSV600...1100A2C2161  
 -5L  
 Governor no. : 0 420 232 495

Customer-spec. information  
 Customer : JOHN DEERE

Engine : 6466AZ-02

1st version kW : 130.0  
 Rated speed : 2200

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 457 413 010

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 1 688 901 017

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,6

Test lines : 1 680 750 014

Outside diameter  
 x Wall thickness : 6.00X2.00X600  
 x Length mm

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values -----

## BEGINNING OF DELIVERY

Test pressure, bar: 27...29

Prestroke mm : 2.45...2.55  
 : (2.40...2.60)  
 Rack travel in mm : 10.50...10.50  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1100  
 -----  
 Rack travel in mm : 10.10...10.20  
 -----  
 Del. quantity cm<sup>3</sup>/ : 11.1...11.3  
 -----  
 100 s: (10.9...11.5)  
 -----  
 Spread cm<sup>3</sup> : 0.3  
 -----  
 100 s: (0.6)  
 -----

2nd speed rpm : 600.0  
 Rack travel in mm : 4.4...4.6  
 Del. quantity cm<sup>3</sup>/ : 1.1...1.5  
 100 s: (0.8...1.7)  
 Spread cm<sup>3</sup> : 0.7  
 100 s: (0.9)

## GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -3  
 Speed rpm : 800  
 Rack travel in mm : 0.30...0.70

Governor spring pre-tension  
 Click setting x : ?

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 1100  
 Aneroid pressure h: 500  
 Del. quantity : 111.0...113.0  
 1000 : (109.0...115.0)  
 Spread cm<sup>3</sup> : 3.50  
 1000 : (6.00)

## RATED SPEED

1st version  
 Control lever  
 position degrees: 42...50

Testing:  
1st rack travel in: 9.10  
Speed rpm : 1145...1155  
2nd rack travel in: 4.00  
Speed rpm : 1195...1205  
4th rack travel in: 1250  
Speed rpm : 0.30...1.40

#### LOW IDLE 1

Control lever  
position degrees: 23...31  
Setting point w/out bumper spring  
Speed rpm : 600  
Rack travel in mm : 4.0

#### Testing:

Speed rpm : 100  
Minimum rack travel: 19.00  
Speed rpm : 600  
Rack travel in mm : 3.90...4.10  
Rack travel in mm : 2.00  
Speed rpm : 690...750

#### TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 1100  
Rack travel in m: 10.10...10.20  
2nd speed rpm : 950  
Rack travel in m: 10.80...11.00

Aneroid/Altitude  
Compensator Test

#### 1st version

Setting  
Speed rpm : 500  
Rack travel in mm : 93  
Contr.-rod trav.mm: 9.00...9.10

#### Measurement

Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 8.30...8.50  
2nd pressure hPa : 146  
Rack travel in m: 9.80...10.20  
3rd pressure hPa : 500  
Rack travel in m: 10.80...11.00

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: 500  
Speed rpm : 950  
Del.quantity cm3/ : 119.0...122.0  
1000 s: (116.5...124.5)  
Speed rpm : 750

Spread cm3 : 4.00  
1000 s: (4.00)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : -  
1000 s: (66.0...74.0)

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 9.10  
Speed rpm : 1145...1155

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 190.0...210.0  
1000 s: (185.0...215.0)  
Rack travel in mm : 19.00...21.00

#### LOW IDLE

Speed rpm : 600  
Rack travel in mm : 4.40...4.60  
Del.quantity cm3/ : 11.0...15.0  
1000 s: (8.5...17.5)  
Spread cm3 : 7.00  
1000 s: (9.00)

#### Remarks:

: JOHN DEERE - RE32396  
Setting without torque-control spring  
retainer with 1 mm control-rod travel  
less. Raising of full-load delivery  
with torque-control spring retainer to  
10.1 mm control-rod travel.

Start-of-delivery mark = 15.5° after  
start of delivery cyl. 1.



# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : HAN 10,8 F4  
 Edition : 18.12.87  
 Replaces : 12.9.86  
 Test oil : ISO-4113

Combination no. : 0 401 076 006

Injection pump  
 Pump designation : PE6A100D32ORS3030  
 EP type number : 0 411 006 018  
 Governor  
 Governor design. : RSV350...1100A8C1119  
 R  
 Governor no. : 0 420 233 179

Customer-spec. information  
 Customer : HANOMAG

Engine : D963A2

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 000

Inlet press., bar : 1.00

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 003

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00x2.00x600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values -----

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 1.80...1.90  
 : (1.75...1.95)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 8.50...9.50  
 & maximum rack tra: 21.00  
 Difference ° CS : 5.50...6.50

## BASIC SETTING

1st speed rpm : 1100  
 -----  
 Rack travel in mm : 11.50...11.60  
 -----  
 Del. quantity cm3/ : 15.0...15.2  
 -----  
 100 s: (14.8...15.4)  
 -----  
 Spread cm3 : 0.3  
 -----  
 100 s: (0.6)  
 -----  
 2nd speed rpm : 350.0  
 Rack travel in mm : 6.8...7.0  
 Del. quantity cm3/ : 1.8...2.4  
 100 s: (1.6...2.7)  
 Spread cm3 : 0.3  
 100 s: (0.5)

## GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -3  
 Speed rpm : 800  
 Rack travel in mm : 0.30...0.70

Governor spring pre-tension  
 Click setting x : 5.50

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 1100  
 Del. quantity : 150.0...152.0  
 1000 : (148.0...154.0)  
 Spread cm3 : 3.00  
 1000 : (6.00)

## RATED SPEED

1st version  
 Control lever  
 position degrees: 52...60

Testing:

1st rack travel in: 10.50  
Speed rpm : 1140...1150  
2nd rack travel in: 4.00  
Speed rpm : 1190...1220  
4th rack travel in: 1355  
Speed rpm : 0.30...1.40

#### LOW IDLE 1

Control lever  
position degrees: 20...28  
Setting point w/out bumper spring  
Speed rpm : 350  
Rack travel in mm : 5.5

#### Testing:

Speed rpm : 100  
Minimum rack trave: 19.50  
Speed rpm : 350  
Rack travel in mm : 5.90...6.10  
Rack travel in mm : 2.00  
Speed rpm : 435...495  
Speed rpm : 550  
Maximum rack trave: 1.00

#### TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 1100  
Rack travel in m: 11.50...11.60  
2nd speed rpm : 550  
Rack travel in m: 11.50...11.70  
3rd speed rpm : 400  
Rack travel in m: 12.70...13.30

#### BREAKAWAY

1st version  
1min rack travel less than

full load rack tr: 10.50  
Speed rpm : 1140...1150

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Rack travel in mm : 19.00...21.00

Remarks:

:

Cold-start testing of RSV governor  
according to VDT-1-420/114.

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : HAN 10,8 F5  
 Edition : 18.12.87  
 Replaces : 17.12.86  
 Test oil : ISO-4113

Combination no. : 0 401 076 007

Injection pump  
 Pump designation : PE6A100D32ORS3030-1  
 EP type number : 0 411 006 019  
 Governor  
 Governor design. : RSV350...1100A8C2217  
 R  
 Governor no. : 0 420 232 462

Customer-spec. information  
 Customer : HANOMAG

Engine : D964T

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 000

Inlet press., bar : 1.00

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 003

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values -----

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 1.80...1.90  
 : (1.75...1.95)

Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 8.50...9.50  
 & maximum rack tra: 21.00  
 Difference ° CS : 5.50...6.50

## BASIC SETTING

1st speed rpm : 1100  
 -----  
 Rack travel in mm : 10.20...10.30  
 -----  
 Del. quantity cm3/ : 12.6...12.8  
 -----  
 100 s: (12.4...13.0)  
 -----  
 Spread cm3 : 0.3  
 -----  
 100 s: (0.6)  
 -----  
 2nd speed rpm : 350.0  
 Rack travel in mm : 6.6...6.8  
 Del. quantity cm3/ : 1.5...2.1  
 100 s: (1.2...2.3)  
 Spread cm3 : 0.3  
 100 s: (0.5)

## GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -3  
 Speed rpm : 800  
 Rack travel in mm : 0.30...0.70

Governor spring pre-tension  
 Click setting x : 5.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 1100  
 Del. quantity : 126.0...128.0  
 1000 : (124.0...130.0)  
 Spread cm3 : 3.50  
 1000 : (6.00)

## RATED SPEED

1st version  
 Control lever  
 position degrees: 53...61

Testing:

1st rack travel in: 9.20  
Speed rpm : 1140...1150  
2nd rack travel in: 4.00  
Speed rpm : 1175...1205  
3rd rack travel in: 4.00  
Speed rpm : 1210...1240  
Speed rpm : 0.30...1.40

Cold-start testing of RSV governor  
according to VDT-I-420/114.

LOW IDLE 1  
Control lever  
position degrees: 22...30  
Setting point w/out bumper spring  
Speed rpm : 350  
Rack travel in mm : 6.2

Testing:  
Speed rpm : 100  
Minimum rack trave: 19.50  
Speed rpm : 350  
Rack travel in mm : 6.60...6.80  
Rack travel in mm : 2.00  
Speed rpm : 500...560

TORQUE CONTROL  
Torque control curve - 1st version  
1st speed rpm : 1100  
Rack travel in m: 10.20...10.30  
2nd speed rpm : 500  
Rack travel in m: 11.10...11.20  
4th speed rpm : 940  
Rack travel in m: 10.50...10.70

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Speed rpm : 750  
Del.quantity cm<sup>3</sup>/ : 140.0...143.0  
1000 s: (137.5...145.5)

#### BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 9.20  
Speed rpm : 1140...1150

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 225.0...235.0  
1000 s: (222.0...238.0)  
Rack travel in mm : 19.50...21.00

Remarks:

:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : DEE 7,6 B 1  
 Edition : 14.01.88  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 401 276 049  
 Injection pump  
 Pump designation : PES6A100D41ORS3034  
 EP type number : 0 411 206 016  
 Governor  
 Governor design. : RSV600...1100A2C2080  
 Governor no. : 9 420 234 159

Customer-spec. information  
 Customer : JOHN DEERE

Engine : 6466 A

1st version kW : 152.0  
 Rated speed : 2200

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter  
 x Wall thickness : 6.00X2.00X600  
 x Length mm

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values -----

## BEGINNING OF DELIVERY

Test pressure, bar : 27...29

Prestroke mm : 1.95...2.05  
 : (1.90...2.10)

Rack travel in mm : 10.50...10.50  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 11.70...11.80

Del. quantity cm<sup>3</sup>/ : 12.9...13.1

100 s : (12.7...13.3)

Spread cm<sup>3</sup> : 0.4

100 s : (0.7)

2nd speed rpm : 600.0

Rack travel in mm : 4.5...4.7

Del. quantity cm<sup>3</sup>/ : 1.3...1.7

100 s : (1.1...1.8)

Spread cm<sup>3</sup> : 0.4

100 s : (0.7)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100

Del. quantity : 129.0...131.0

1000 : (127.0...133.0)

Spread cm<sup>3</sup> : 4.00

1000 : (7.50)

## RATED SPEED

1st version

Control lever

position degrees: 33...41

Testing:

1st rack travel in: 10.70

Speed rpm : 1145...1155

2nd rack travel in: 4.00

Speed rpm : 1195...1225

4th rack travel in: 1250

Speed rpm : 0.30...1.40

LOW IDLE 1  
Control lever  
position degrees: 15...24  
Setting point w/out bumper spring  
Speed rpm : 600  
Rack travel in mm : 4.1

Testing:  
Speed rpm : 100  
Minimum rack trave: 19.00  
Speed rpm : 600  
Rack travel in mm : 4.50...4.70  
Rack travel in mm : 2.00  
Speed rpm : 635...695

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 500  
Rack travel in mm : -  
Contr.-rod trav.mm: 8.60...8.70

Measurement  
Speed 1/min : 500

1st pressure hPa : 333  
Rack travel in m: 11.55...11.65  
2nd pressure hPa : 233  
Rack travel in m: 10.75...11.15

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : -  
1000 s: (65.0...75.0)

#### BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 10.70  
Speed rpm : 1145...1155

INTERMEDIATE RATED SPEED  
Rack travel in mm : 4.00

#### STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/ : 170.0...190.0  
1000 s: (165.0...195.0)  
Rack travel in mm : 19.00...21.00

#### HIGH IDLE

1st version  
Speed rpm : 1200  
Rack travel in mm : 4.70...4.90

#### LOW IDLE

Speed rpm : 600  
Rack travel in mm : 4.50...4.70  
Del.quantity cm3/ : 13.0...17.0  
1000 s: (11.5...18.5)  
Spread cm3 : 4.00  
1000 s: (7.50)

Remarks:  
: JOHN DEERE - RE23751  
Start-of-delivery mark is at 15°  
angular displacement of the cam after  
start of delivery at cylinder 1 with  
control-rod travel 9.00...12.00 mm

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB 19,1 N 4  
 Edition : 15.01.88  
 Replaces : 12.9.86  
 Test oil : ISO-4113  
 Combination no. : 0 401 840 103  
 Injection pump  
 Pump designation : PE12P110A320LS854-1  
 EP type number : 0 411 810 045  
 Governor  
 Governor design. : RQ750PA374R  
 Governor no. : 0 421 801 074

Customer-spec. information  
 Customer : DAIMLER-BENZ

Engine : OM404A

1st version kW : 312.0  
 Rated speed : 1500

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve  
 : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
 quantity min. 1/h: 150...170

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values -----

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.20...3.30  
 : (3.15...3.35)  
 Rack travel in mm : 9.00...12.00

D05

Firing order : 12- 1- 5- 9- 8- 3-  
 4- 11- 10- 2- 6- 7

Phasing : 0-45-60-105-120-165-  
 180-225-240-285-300-  
 345

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 12

## BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 14.00...14.10

Del. quantity cm<sup>3</sup>/ : 15.6...15.8

100 s: (15.3...16.1)

Spread cm<sup>3</sup> : 0.4

100 s: (0.8)

2nd speed rpm : 300.0

Rack travel in mm : 7.5...7.7

Del. quantity cm<sup>3</sup>/ : 1.3...1.8

100 s: (1.0...2.0)

Spread cm<sup>3</sup> : 0.4

100 s: (0.7)

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700

Del. quantity : 156.0...158.0

1000 : (153.0...161.0)

Spread cm<sup>3</sup> : 4.00

1000 : (8.00)

## RATED SPEED

1st version

Testing:

1st rack travel in: 13.00

Speed rpm : 750...755

2nd rack travel in: 5.40

Speed rpm : 785...795

4th rack travel in: 850

Speed rpm : 0.00...1.00

## BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 13.00  
Speed rpm : 750...755

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 145.0...165.0  
1000 s: (141.0...169.0)

Remarks:

:

APPLICATION  
Generator set



# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : BET 8,8 B 1  
 Edition : 18.12.87  
 Replaces : 7.84  
 Test oil : ISO-4113

Combination no. : 0 401 846 489

Injection pump  
 Pump designation : PE6P120A32ORS377  
 EP type number : 0 411 826 108  
 Governor  
 Governor design. : RGV275...1200PA425-2  
 Governor no. : 0 421 813 403

Customer-spec. information  
 Customer : RVI

Engine : MIDS 062030

1st version kW : 158.1  
 Rated speed : 2400

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve  
 : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 1 688 901 019

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
 x Wall thickness  
 x Length mm : 6,00X1,50X1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values -----

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.80...2.90  
 : (2.75...2.95)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1200  
 -----  
 Rack travel in mm : 12.60...12.70  
 -----  
 Del. quantity cm3/ : 15.0...15.2  
 -----  
 100 s: (14.7...15.5)  
 -----  
 Spread cm3 : 0.5  
 -----  
 100 s: (0.9)  
 -----

2nd speed rpm : 275.0  
 Rack travel in mm : 5.4...5.6  
 Del. quantity cm3/ : 1.1...1.7  
 100 s: (0.8...2.0)  
 Spread cm3 : 0.8  
 100 s: (1.2)

(B) Setting of injection pump  
 with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 275  
 travel mm : 1.00...1.20  
 2nd speed rpm : 425  
 travel mm : 3.00...3.50  
 3rd speed rpm : 900  
 travel mm : 5.60...5.90  
 4th speed rpm : 1200  
 travel mm : 7.60...7.70

## GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -1  
 Speed rpm : 1275  
 Rack travel in mm : 15.20...17.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 1200  
 Aneroid pressure h: 700  
 Del. quantity : 150.0...152.0  
 1000 : (147.0...155.0)

Spread cm3 : 5.00  
1000 : (9.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 60...68

Testing:  
1st rack travel in: 11.60  
Speed rpm : 1245...1255  
2nd rack travel in: 4.00  
Speed rpm : 1375...1405  
4th rack travel in: 1500  
Speed rpm : 0.00...1.00

LOW IDLE 1  
Control lever  
position degrees: 6...14

Testing:  
Speed rpm : 200  
Minimum rack trave: 8.10  
Speed rpm : 275  
Rack travel in mm : 5.40...5.60

CONSTANT REGULATION  
Speed rpm : 275...375

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 500  
Rack travel in mm : 700  
Contr.-rod trav.mm: 12.60...12.70

Measurement  
Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 6.60...6.70  
2nd pressure hPa : 190  
Rack travel in m: 12.20...12.30  
3rd pressure hPa : 160  
Rack travel in m: 11.50...11.70

#### START CUT-OUT

Speed 1/min : 195 (215)

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: -  
Speed rpm : 350

Del.quantity cm3/ : 51.0...55.0  
1000 s: (48.0...58.0)

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: -1.00  
Speed rpm : 1245...1255

#### STARTING FUEL DELIVERY

Speed rpm : 100

#### LOW IDLE

Speed rpm : 275  
Rack travel in mm : -7.00...-7.20  
Del.quantity cm3/ : 11.0...17.0  
1000 s: (8.0...20.0)  
Spread cm3 : 8.00  
1000 s: (12.00)

Remarks:  
:

APPLICATION  
Omnibus

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : FIA 13,8 A5  
 Edition : 11.12.87  
 Replaces : 7.84  
 Test oil : ISO-4113  
 Combination no. : 0 401 846 496  
 Injection pump  
 Pump designation : PE6P120A72ORS167  
 EP type number : 0 411 826 053  
 Governor  
 Governor design. : RQ225/1100PA703  
 Governor no. : 0 421 801 250

Customer-spec. information  
 Customer : IVECO-FIAT

Engine : 8210.02

1st version kW : 184.0  
 Rated speed : 2200

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 1 688 901 019

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00x1.50x1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values -----

## BEGINNING OF DELIVERY

Test pressure, bar : 25...27

Prestroke mm : 2.00...2.10  
 : (1.95...2.15)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 11.10...11.20

Del. quantity cm<sup>3</sup>/ : 17.0...17.3

100 s : (16.7...17.6)

Spread cm<sup>3</sup> : 0.5

100 s : (0.8)

2nd speed rpm : 225.0

Rack travel in mm : 6.4...6.6

Del. quantity cm<sup>3</sup>/ : 1.7...2.3

100 s : (1.4...2.6)

Spread cm<sup>3</sup> : 0.8

100 s : (1.2)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 550

Rack travel in mm : 15.60...16.40

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100

Del. quantity : 170.0...173.0

1000 : (167.0...176.0)

Spread cm<sup>3</sup> : 5.00

1000 : (8.00)

## RATED SPEED

1st version

Setting point:

Speed rpm : 550

Rack travel in mm : 16.0

Testing:

1st rack travel in: 10.10

Speed rpm : 1145...1160

2nd rack travel in: 4.00  
Speed rpm : 1195...1225  
4th rack travel in: 1350  
Speed rpm : 0.00...1.00

#### LOW IDLE 1

Setting point w/out bumper spring  
Speed rpm : 225  
Rack travel in mm : 6.5

#### Testing:

Speed rpm : 100  
Minimum rack travel: 8.00  
Speed rpm : 225  
Rack travel in mm : 6.40...6.60  
Rack travel in mm : 2.00  
Speed rpm : 340...380

#### TORQUE CONTROL

Dimension a mm : -  
Torque control curve - 1st version  
1st speed rpm : 1100  
Rack travel in m: 11.10...11.20  
2nd speed rpm : 550  
Rack travel in m: 11.10...11.30

#### BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 10.10  
Speed rpm : 1145...1160

#### STARTING FUEL DELIVERY

Speed rpm : 100

Remarks:

:

Check electrically unlatched starting  
fuel delivery (EES) with 24 volt.

#### APPLICATION

Omnibus

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : RVI 9,8 B 4  
 Edition : 15.01.88  
 Replaces : 6.11.87  
 Test oil : ISO-4113  
 Combination no. : 0 401 846 497  
 Injection pump  
 Pump designation : PE6P120A32ORS438-1  
 EP type number : 0 411 826 133  
 Governor  
 Governor design. : RQV275...1200PA648-2  
 Governor no. : 0 421 813 490

Customer-spec. information  
 Customer : RVI

Engine : MIDS062030

1st version kW : 150.0  
 Rated speed : 2400

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve  
 : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 1 688 901 019

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00x1.50x1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values -----

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.50...3.60  
 : (3.45...3.65)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1200

Rack travel in mm : 10.20...10.30

Del. quantity cm<sup>3</sup>/ : 13.3...13.5

100 s: (13.0...13.8)

Spread cm<sup>3</sup> : 0.5

100 s: (0.9)

2nd speed rpm : 275.0

Rack travel in mm : 6.4...6.6

Del. quantity cm<sup>3</sup>/ : 1.5...2.1

100 s: (1.2...2.4)

Spread cm<sup>3</sup> : 0.8

100 s: (1.2)

(B) Setting of injection pump  
 with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 275

travel mm : 1.20...1.40

2nd speed rpm : 450

travel mm : 3.30...4.00

3rd speed rpm : 850

travel mm : 5.90...6.20

4th speed rpm : 1200

travel mm : 8.20...8.40

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1230

Rack travel in mm : 15.20...17.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1200

Del. quantity : 133.0...135.0

1000 : (130.0...138.0)

Spread        cm<sup>3</sup> : 5.00  
              1000 : (9.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 61...69

Testing:  
1st rack travel in: 9.20  
Speed        rpm : 1255...1265  
2nd rack travel in: 3.90  
Speed        rpm : 1355...1385  
4th rack travel in: 1500  
Speed        rpm : 0.00...1.00

LOW IDLE 1  
Control lever  
position degrees: 8...16

Testing:  
Speed        rpm : 200  
Minimum rack travel: 7.30  
Speed        rpm : 275  
Rack travel in mm : 4.90...5.10

CONSTANT REGULATION  
Speed        rpm : 275...360

#### START CUT-OUT

Speed        1/min : 195 (215)

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Speed        rpm : 750  
Del.quantity cm<sup>3</sup>/ : 116.0...122.0  
              1000 s: (113.0...125.0)

#### BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: -1.00  
Speed        rpm : 1255...1265

#### STARTING FUEL DELIVERY

Speed        rpm : 100  
Del.quantity cm<sup>3</sup>/ : 105.0...125.0  
              1000 s: (101.0...129.0)

#### LOW IDLE

Speed        rpm : 275  
Rack travel in mm : -5.10...-5.30

#### Remarks:

:  
Start-of-delivery mark at the "INJ"  
marking

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB 11,6 B  
 Edition : 09.03.87  
 Replaces : 10.85  
 Test oil : ISO-4113  
 Combination no. : 0 401 846 507  
 Injection pump  
 Pump designation : PE6P100A72ORS473  
 EP type number : 0 411 806 196  
 Governor  
 Governor design. : RQV300...1100PA740  
 Governor no. : 0 421 813 472

Customer-spec. information  
 Customer : DAIMLER-BENZ

Engine : OM 355

1st version kW : 177.0  
 Rated speed : 2200

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve  
 : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
 quantity min. 1/h: 100...0

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00x1.50x600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values -----

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.50...3.60  
 : (3.45...3.65)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 13.10...13.20

Del. quantity cm3/ : 12.5...12.7

100 s: (12.3...12.9)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 300.0

Rack travel in mm : 7.9...8.1

Del. quantity cm3/ : 1.2...1.8

100 s: (0.9...2.0)

Spread cm3 : 0.3

100 s: (0.5)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1160

Rack travel in mm : 15.20...17.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100

Del. quantity : 125.0...127.0

1000 : (123.0...129.0)

Spread cm3 : 3.50

1000 : (6.00)

## RATED SPEED

1st version

Control lever

position degrees: 61...69

Testing:

1st rack travel in: 12.10

Speed rpm : 1140...1150

2nd rack travel in: 4.00

Speed rpm : 1195...1225

4th rack travel in: 1350  
Speed rpm : 0.00...1.50

LOW IDLE 1  
Control lever  
position degrees: 18...26

Testing:  
Speed rpm : 100  
Minimum rack travel: 9.60  
Speed rpm : 300  
Rack travel in mm : 7.90...8.10

CONSTANT REGULATION  
Speed rpm : 300...500

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version  
Speed rpm : 600  
Del. quantity cm<sup>3</sup>/ : 117.0...121.0  
1000 s: (114.5...123.5)  
Spread cm<sup>3</sup> : 5.00  
1000 s: (7.00)

BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 12.10  
Speed rpm : 1140...1150

STARTING FUEL DELIVERY

Speed rpm : 100  
Del. quantity cm<sup>3</sup>/ : 150.0...170.0  
1000 s: (146.0...174.0)

Remarks:

;



# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : VOL 10,0 S  
Edition : 07.01.88  
Replaces : 6.11.87  
Test oil : ISO-4113  
  
Combination no. : 0 401 846 529  
  
Injection pump  
Pump designation : PE6P120A32ORS3186  
EP type number : 0 411 826 756  
Governor  
Governor design. : RQV250..102SPA657-13  
Governor no. : 0 421 813 592

Customer-spec. information  
Customer : VOLVO

Engine : TD102F

1st version kW : 220.0  
Rated speed : 2050

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 1 688 901 019

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
x Wall thickness  
x Length mm : 6.00X1.50X1000

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values -----

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.60...2.70  
                  : (2.55...2.75)  
Rack travel in mm : 9.00...12.00  
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 700  
-----  
Rack travel in mm : 11.40...11.50  
-----  
Del. quantity cm3/ : 19.7...19.9  
-----  
100 s: (19.4...20.2)  
-----  
Spread cm3 : 0.5  
-----  
100 s: (0.9)  
-----

2nd speed rpm : 250.0  
Rack travel in mm : 3.9...4.1  
Del. quantity cm3/ : 1.7...2.2  
100 s: (1.4...2.4)  
Spread cm3 : 0.5  
100 s: (0.7)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 250  
travel mm : 1.20...1.30  
2nd speed rpm : 430  
travel mm : 3.50...3.80  
3rd speed rpm : 700  
travel mm : 6.40...6.60  
4th speed rpm : 900  
travel mm : 6.40...6.60  
5th speed rpm : 1080  
travel mm : 8.30...8.50

## GUIDE SLEEVE POSITION

Control-lever position  
Degree: -1  
Speed rpm : 1080  
Rack travel in mm : 15.20...17.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
Speed rpm : 700  
Aneroid pressure h: 1000

Del.quantity : 197.0...199.0  
1000 : (194.0...202.0)  
Spread cm3 : 5.00  
1000 : (9.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 58...66

#### Testing:

1st rack travel in: 10.40  
Speed rpm : 1055...1065  
2nd rack travel in: 4.00  
Speed rpm : 1110...1140  
4th rack travel in: 1250  
Speed rpm : 0.00...1.00

#### LOW IDLE 1

Control lever  
position degrees: 4...12

#### Testing:

Speed rpm : 100  
Minimum rack travel: 5.40  
Speed rpm : 250  
Rack travel in mm : 3.90...4.10

#### CONSTANT REGULATION

Speed rpm : 250...350

Aneroid/Altitude  
Compensator Test

#### 1st version

##### Setting

Speed rpm : 500  
Rack travel in mm : 1000  
Contr.-rod trav.mm: 11.40...11.50

##### Measurement

Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 8.80...9.00  
2nd pressure hPa : 80  
Rack travel in m: 9.20...9.30  
3rd pressure hPa : 400  
Rack travel in m: 11.10...11.30

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: -  
Speed rpm : 700  
Del.quantity cm3/ : 143.0...145.0  
1000 s: (140.0...148.0)

#### BREAKAWAY

#### 1st version

1mm rack travel less than

full load rack tr: 10.40  
Speed rpm : 1055...1065

#### LOW IDLE

Speed rpm : 250  
Rack travel in mm : 3.90...4.10  
Del.quantity cm3/ : 17.0...22.0  
1000 s: (14.5...24.5)  
Spread cm3 : 5.00  
1000 s: (7.00)

Remarks:

:

Delivery-valve spring pre-tension =  
2.40...2.60 mm.  
Permissible alteration from 2.20...2.90  
mm

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : VAL 7,2 B  
 Edition : 18.12.87  
 Replaces : 9.3.87  
 Test oil : ISO-4113

Combination no. : 0 401 846 532

Injection pump  
 Pump designation : PE6P110A320RS856  
 EP type number : 0 411 816 170  
 Governor  
 Governor design. : RQV250...1150PA825  
 Governor no. : 0 421 813 570

Customer-spec. information  
 Customer : VALMET

Engine : 612 DSJ

1st version kW : 165.0  
 Rated speed : 2300

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values -----

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.00...3.10  
 : (2.95...3.15)

Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 12.00...12.10

Del. quantity cm<sup>3</sup>/ : 13.9...14.1

100 s: (13.6...14.4)

Spread cm<sup>3</sup> : 0.4

100 s: (0.7)

2nd speed rpm : 325.0

Rack travel in mm : 6.1...6.3

Del. quantity cm<sup>3</sup>/ : 1.2...1.6

100 s: (0.9...1.8)

Spread cm<sup>3</sup> : 0.3

100 s: (0.6)

(B) Setting of injection pump  
 with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 325  
 travel mm : 2.00...2.10

2nd speed rpm : 380  
 travel mm : 2.30...2.70

3rd speed rpm : 470  
 travel mm : 2.90...3.40

4th speed rpm : 1200  
 travel mm : 8.10...8.20

5th speed rpm : 1310  
 travel mm : 9.10...9.40

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1240

Rack travel in mm : 15.20...17.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700

Aneroid pressure h: 700

Del. quantity : 139.0...141.0

1000 : (136.0...144.0)

Spread      cm<sup>3</sup>    : 4.00  
             1000    : (7.50)

#### RATED SPEED

1st version  
Control lever  
position degrees: 48...56

Testing:  
1st rack travel in: 11.00  
Speed      rpm    : 1190...1200  
2nd rack travel in: 4.00  
Speed      rpm    : 1290...1320  
4th rack travel in: 1450  
Speed      rpm    : 0.00...1.00

LOW IDLE 1  
Control lever  
position degrees: 16...24

Testing:  
Speed      rpm    : 100  
Minimum rack travel: 7.70  
Speed      rpm    : 325  
Rack travel in mm : 6.10...6.30

CONSTANT REGULATION  
Speed      rpm    : 325...500

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed      rpm    : 500  
Rack travel in mm : 700  
Contr.-rod trav.mm: 12.00...12.10

Measurement  
Speed      1/min : 500

1st pressure hPa : -  
Rack travel in m: 10.30...10.50  
2nd pressure hPa : 415  
Rack travel in m: 11.60...11.70  
3rd pressure hPa : 270  
Rack travel in m: 10.70...10.90

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: -  
Speed      rpm    : 700  
Del.quantity cm<sup>3</sup>/ : 102.5...105.5  
             1000 s: (100.0...108.0)

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 11.00  
Speed      rpm    : 1190...1200

#### STARTING FUEL DELIVERY

Speed      rpm    : 100  
Del.quantity cm<sup>3</sup>/ : 200.0...220.0  
             1000 s: (196.0...224.0)  
Rack travel in mm : 20.00...21.00

#### LOW IDLE

Speed      rpm    : 325  
Rack travel in mm : 6.10...6.30  
Del.quantity cm<sup>3</sup>/ : 12.0...16.0  
             1000 s: (9.5...18.5)  
Spread      cm<sup>3</sup>    : 3.00  
             1000 s: (6.00)

Remarks:

Delivery-valve spring pre-tension =  
2.40...2.60 mm.  
Permissible alteration from 2.20...2.90  
mm

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : VOL 7,1 A 3  
 Edition : 22.01.88  
 Replaces : 2.11.87  
 Test oil : ISO-4113

Combination no. : 0 401 846 534

Injection pump  
 Pump designation : PE6P110A32ORS483-4  
 EP type number : 0 411 816 172  
 Governor  
 Governor design. : RQV250...1200PA499-5  
 Governor no. : 0 421 813 577

Customer-spec. information  
 Customer : VOLVO

Engine : TD71FD

1st version kW : 158.0  
 Rated speed : 2400

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00x1.50x600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values -----

## BEGINNING OF DELIVERY

Test pressure, bar : 25...27

Prestroke mm : 3.00...3.10  
 : (2.95...3.15)  
 Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 11.80...11.90

Del. quantity cm<sup>3</sup>/ : 12.0...12.2

100 s : (11.7...12.5)

Spread cm<sup>3</sup> : 0.4

100 s : (0.7)

2nd speed rpm : 250.0

Rack travel in mm : 5.3...5.5

Del. quantity cm<sup>3</sup>/ : 1.6...2.0

100 s : (-)

Spread cm<sup>3</sup> : 0.3

100 s : (0.6)

(B) Setting of injection pump  
 with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 250  
 travel mm : 1.10...1.30

2nd speed rpm : 380  
 travel mm : 2.30...2.60

3rd speed rpm : 500  
 travel mm : 2.90...3.30

4th speed rpm : 1260  
 travel mm : 7.70...7.90

5th speed rpm : 1400  
 travel mm : 9.00...9.30

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1330

Rack travel in mm : 15.20...17.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700

Aneroid pressure h : 900

Del. quantity : 120.0...122.0

1000 : (117.0...125.0)

Spread      cm<sup>3</sup> : 4.00  
             1000 : (7.50)

#### RATED SPEED

1st version  
Control lever  
position degrees: 54...62

Testing:  
1st rack travel in: 10.80  
Speed      rpm : 1260...1270  
2nd rack travel in: 4.00  
Speed      rpm : 1390...1420  
4th rack travel in: 1550  
Speed      rpm : 0.00...1.00

LOW IDLE 1  
Control lever  
position degrees: 6...14

Testing:  
Speed      rpm : 100  
Minimum rack travel: 6.80  
Speed      rpm : 250  
Rack travel in mm : 5.30...5.50

CONSTANT REGULATION  
Speed      rpm : 250...480

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed      rpm : 500  
Rack travel in mm : 900  
Contr.-rod trav.mm: 11.80...11.90

Measurement  
Speed      1/min : 500

1st pressure hPa : -  
Rack travel in m: 10.20...10.30  
2nd pressure hPa : 545  
Rack travel in m: 11.60...11.70  
3rd pressure hPa : 230  
Rack travel in m: 10.40...10.60

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: -  
Speed      rpm : 700  
Del.quantity cm<sup>3</sup>/ : 85.0...88.0  
                 1000 s: (82.0...91.0)

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 10.80  
Speed      rpm : 1260...1270

#### STARTING FUEL DELIVERY

Speed      rpm : 100  
Del.quantity cm<sup>3</sup>/ : 170.0...200.0  
                 1000 s: (-)  
Rack travel in mm : 20.00...21.00

#### LOW IDLE

Speed      rpm : 250  
Rack travel in mm : 5.30...5.50  
Del.quantity cm<sup>3</sup>/ : 16.0...20.0  
Spread      cm<sup>3</sup> : 3.00  
                 1000 s: (6.00)

Remarks:

:  
Delivery-valve spring pre-tension =  
2.40...2.60 mm.  
Permissible alteration from 2.20...2.90  
mm

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : RVI 11,9 A1  
 Edition : 18.12.87  
 Replaces : 9.10.87  
 Test oil : ISO-4113

Combination no. : 0 401 846 543

Injection pump  
 Pump designation : PE6P110A720RS380  
 EP type number : 0 411 816 126  
 Governor  
 Governor design. : RQV250...1000PA434-4  
 Governor no. : 0 421 813 659

Customer-spec. information  
 Customer : RVI

Engine : BSR 36 F

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve  
 : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00x1.50x600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values -----

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.80...2.90  
 : (2.75...2.95)

Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 15.40...15.50

Del. quantity cm<sup>3</sup>/ : 19.4...19.7

100 s : (19.1...19.9)

Spread cm<sup>3</sup> : 0.4

100 s : (0.7)

2nd speed rpm : 250.0

Rack travel in mm : 7.6...8.0

Del. quantity cm<sup>3</sup>/ : 1.4...1.9

100 s : (1.1...2.1)

Spread cm<sup>3</sup> : 0.4

100 s : (0.7)

(B) Setting of injection pump  
 with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 300

travel mm : 1.70...2.00

2nd speed rpm : 850

travel mm : 6.00...6.40

3rd speed rpm : 1000

travel mm : 7.30...7.50

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1100

Rack travel in mm : 15.20...17.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000

Aneroid pressure h: 900

Del. quantity : 194.0...197.0

1000 : (191.5...199.5)

Spread cm<sup>3</sup> : 4.00

1000 : (7.50)

## RATED SPEED

1st version

Control lever

position degrees: 62...70

Testing:

1st rack travel in: 14.40  
Speed rpm : 1040...1050  
2nd rack travel in: 4.00  
Speed rpm : 1190...1220  
4th rack travel in: 1300  
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever  
position degrees: 11...19

Testing:

Speed rpm : 100  
Minimum rack travel: 9.30  
Speed rpm : 250  
Rack travel in mm : 7.60...8.00

CONSTANT REGULATION

Speed rpm : 345...465

Aneroid/Altitude  
Compensator Test

1st version

Setting

Speed rpm : 500  
Rack travel in mm : 900  
Contr.-rod trav.mm: 15.40...15.50

Measurement

Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 12.80...13.00  
2nd pressure hPa : 400  
Rack travel in m: 15.10...15.20  
3rd pressure hPa : 250  
Rack travel in m: 13.40...13.70

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 900  
Speed rpm : 700  
Del.quantity cm3/ : 198.0...204.0  
1000 s: (195.0...207.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 141.0...144.0  
1000 s: (138.5...146.5)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 14.40  
Speed rpm : 1040...1050

STARTING FUEL DELIVERY

Speed rpm : 100

Remarks: :



# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : ENA 10,1 A  
 Edition : 15.01.88  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 401 846 544  
 Injection pump  
 Pump designation : PE6P100A820LS130  
 EP type number : 0 411 806 179  
 Governor  
 Governor design. : RQ250/1050PA627-1  
 Governor no. : 0 421 801 407

Customer-spec. information  
 Customer : ENASA

Engine : 95 A1 BZ,

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve  
 : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values -----

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.80...2.90  
 : (2.75...2.95)

Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1030

Rack travel in mm : 12.00...12.10

Del. quantity cm3/ : 11.8...12.0

100 s: (11.6...12.2)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 250.0

Rack travel in mm : 7.9...8.1

Del. quantity cm3/ : 1.8...2.2

100 s: (1.5...2.4)

Spread cm3 : 0.3

100 s: (0.5)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 600

Rack travel in mm : 15.60...16.40

## FULL LOAD DELIV. AT FULL LOAD STOP

### 1st version

Speed rpm : 1030

Del. quantity : 118.0...120.0

1000 : (116.0...122.0)

Spread cm3 : 3.50

1000 : (6.00)

## RATED SPEED

### 1st version

Setting point:

Speed rpm : 600

Rack travel in mm : 16.0

## Testing:

1st rack travel in: 11.00

Speed rpm : 1095...1110

2nd rack travel in: 4.00

Speed rpm : 1140...1170

4th rack travel in: 1250

Speed rpm : 0.00...1.00

## LOW IDLE 1

Setting point w/out bumper spring

Speed rpm : 250

Rack travel in mm : 6.0

Testing:

Speed rpm : 100

Minimum rack trave: 7.50

Speed rpm : 250

Rack travel in mm : 5.90...6.10

Rack travel in mm : 2.00

Speed rpm : 350...390

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.00

Speed rpm : 1095...1110

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/ : 260.0...280.0

1000 s: (256.0...284.0)

Rack travel in mm : 19.50...21.00

Remarks:

:

APPLICATION

Special-purpose vehicle

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : ENA 10,1 B  
 Edition : 15.01.88  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 401 846 546  
 Injection pump  
 Pump designation : PE6P100A820LS130  
 EP type number : 0 411 806 179  
 Governor  
 Governor design. : RQV250...1050PA807-1  
 Governor no. : 0 421 813 665

Customer-spec. information  
 Customer : ENASA

Engine : 95 A1 BX

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values -----

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.80...2.90  
 : (2.75...2.95)

Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1030

Rack travel in mm : 12.00...12.10

Del. quantity cm<sup>3</sup>/ : 11.9...12.1

100 s: (11.7...12.3)

Spread cm<sup>3</sup> : 0.3

100 s: (0.6)

2nd speed rpm : 250.0

Rack travel in mm : 7.9...8.1

Del. quantity cm<sup>3</sup>/ : 1.8...2.2

100 s: (1.5...2.4)

Spread cm<sup>3</sup> : 0.3

100 s: (0.5)

(B) Setting of injection pump  
 with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 250

travel mm : 0.90...1.30

2nd speed rpm : 350

travel mm : 1.60...2.20

3rd speed rpm : 700

travel mm : 4.40...5.00

4th speed rpm : 1095

travel mm : 7.90...8.10

5th speed rpm : 1185

travel mm : 8.80...9.20

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1120

Rack travel in mm : 15.20...17.80

## FULL LOAD DELIV. AT FULL LOAD STOP

### 1st version

Speed rpm : 1030

Del. quantity : 119.0...121.0

1000 : (117.0...123.0)

Spread cm<sup>3</sup> : 3.50

1000 : (6.00)

## RATED SPEED

1st version  
Control lever  
position degrees: 41...49

Testing:  
1st rack travel in: 11.00  
Speed rpm : 1090...1100  
2nd rack travel in: 4.00  
Speed rpm : 1170...1200  
4th rack travel in: 1300  
Speed rpm : 0.00...1.00

LOW IDLE 1  
Control lever  
position degrees: 10...18

Testing:  
Speed rpm : 100  
Minimum rack trave: 7.50  
Speed rpm : 250  
Rack travel in mm : 5.90...6.10

CONSTANT REGULATION  
Speed rpm : 250...400

#### START CUT-OUT

Speed 1/min : 170 (150)

#### BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 11.00  
Speed rpm : 1090...1100

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 260.0...280.0  
1000 s: (256.0...284.0)  
Rack travel in mm : 19.50...21.00

Remarks:

:

APPLICATION  
Special-purpose vehicle

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : ENA 10,1 C  
Edition : 22.01.88  
Replaces : -  
Test oil : ISO-4113  
  
Combination no. : 0 401 846 547  
  
Injection pump  
Pump designation : PE6P110A820LS513  
EP type number : 0 411 816 174  
Governor  
Governor design. : RQV250...1000PA811  
Governor no. : 0 421 813 556

Customer-spec. information  
Customer : ENASA

Engine : 95 R1 AX

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
x Wall thickness  
x Length mm : 6.00X1.50X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values -----

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.20...3.30  
: (3.15...3.25)

Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

## BASIC SETTING

1st speed rpm : 900

Rack travel in mm : 12.80...12.90

Del. quantity cm<sup>3</sup>/ : 17.6...17.8

100 s: (17.3...18.1)

Spread cm<sup>3</sup> : 0.4

100 s: (0.7)

2nd speed rpm : 250.0

Rack travel in mm : 6.6...6.8

Del. quantity cm<sup>3</sup>/ : 1.8...2.3

100 s: (1.5...2.5)

Spread cm<sup>3</sup> : 0.4

100 s: (0.7)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 250

travel mm : 1.00...1.40

2nd speed rpm : 400

travel mm : 2.20...2.80

3rd speed rpm : 650

travel mm : 4.50...5.10

4th speed rpm : 1050

travel mm : 8.50...8.70

5th speed rpm : 1140

travel mm : 9.70...10.10

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1040

Rack travel in mm : 15.20...17.80

## FULL LOAD DELIV. AT FULL LOAD STOP

### 1st version

Speed rpm : 900

Aneroid pressure h: 900

Del. quantity : 176.0...178.0

1000 : (173.0...181.0)

Spread cm<sup>3</sup> : 4.00

1000 : (7.50)

## RATED SPEED

### 1st version

Control lever  
position degrees: 41...49

Testing:

1st rack travel in: 11.80  
Speed rpm : 1040...1050  
2nd rack travel in: 4.00  
Speed rpm : 1130...1160  
4th rack travel in: 1250  
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever  
position degrees: 9...17

Testing:

Speed rpm : 100  
Minimum rack travel: 8.20  
Speed rpm : 250  
Rack travel in mm : 6.60...6.80

CONSTANT REGULATION

Speed rpm : 250...380

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 900  
Rack travel in m: 12.80...12.90  
2nd speed rpm : 600  
Rack travel in m: 13.00...13.10

Aneroid/Altitude  
Compensator Test

1st version

Setting

Speed rpm : 500  
Rack travel in mm : 900  
Contr.-rod trav.mm: 13.00...13.10

Measurement

Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 10.90...11.20  
2nd pressure hPa : 440  
Rack travel in m: 12.50...12.60  
3rd pressure hPa : 290  
Rack travel in m: 11.50...11.70

START CUT-OUT

Speed 1/min : 170 (150)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 900

D28

Speed rpm : 600  
Del.quantity cm3/ : 178.0...182.0  
1000 s: (175.0...185.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 131.0...135.0  
1000 s: (128.0...138.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.80  
Speed rpm : 1040...1050

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 150.0...170.0  
1000 s: (146.0...174.0)

Remarks:

:

APPLICATION

Special-purpose vehicle

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : ENA 12,0 A  
Edition : 22.01.88  
Replaces : -  
Test oil : ISO-4113  
  
Combination no. : 0 401 846 548  
  
Injection pump  
Pump designation : PE6P120A32ORS257  
EP type number : 0 411 826 075  
Governor  
Governor design. : RQ250/1100PA877  
Governor no. : 0 421 801 409

Customer-spec. information  
Customer : ENASA

Engine : 9156.13V1

1st version kW : 228  
Rated speed : 2200

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 1 688 901 019

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
x Wall thickness  
x Length mm : 6.00X1.50X1000

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values -----

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.80...2.90  
                  : (2.75...2.95)  
Rack travel in mm : 9.00...12.00  
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1080

Rack travel in mm : 11.40...11.50

Del. quantity cm3/ : 22.2...22.4

100 s: (21.9...22.7)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 250.0

Rack travel in mm : 5.5...5.7

Del. quantity cm3/ : 1.7...2.3

100 s: (1.4...2.6)

Spread cm3 : 0.8

100 s: (1.2)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 550

Rack travel in mm : 15.60...16.40

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1080

Aneroid pressure h: 900

Del. quantity : 222.0...224.0

1000 : (219.0...227.0)

Spread cm3 : 5.00

1000 : (9.00)

## RATED SPEED

1st version

Setting point:

Speed rpm : 550

Rack travel in mm : 16.0

Testing:

1st rack travel in: 10.40

Speed rpm : 1145...1160  
2nd rack travel in: 4.00  
Speed rpm : 1200...1230  
4th rack travel in: 1300  
Speed rpm : 0.00...1.00

#### LOW IDLE 1

Setting point w/out bumper spring  
Speed rpm : 250  
Rack travel in mm : 5.6

#### Testing:

Speed rpm : 100  
Minimum rack travel: 7.10  
Speed rpm : 250  
Rack travel in mm : 5.50...5.70

#### CONSTANT REGULATION

Speed rpm : 250...410

#### TORQUE CONTROL

Dimension a mm : -  
Torque control curve - 1st version  
1st speed rpm : 1080  
Rack travel in m: 11.40...11.50  
2nd speed rpm : 600  
Rack travel in m: 11.70...12.00  
3rd speed rpm : 730  
Rack travel in m: 11.40...11.70

Aneroid/Altitude  
Compensator Test

#### 1st version

Setting  
Speed rpm : 500  
Rack travel in mm : 900  
Contr.-rod trav.mm: 12.20...12.30

#### Measurement

Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 9.90...10.00  
2nd pressure hPa : 380  
Rack travel in m: 10.40...10.50  
3rd pressure hPa : 500  
Rack travel in m: 11.10...11.30

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: 900  
Speed rpm : 600  
Del.quantity cm3/ : 209.0...215.0  
1000 s: (206.0...218.0)  
Aneroid pressure h: -  
Speed rpm : 500

Del.quantity cm3/ : 160.0...162.0  
1000 s: (157.0...165.0)

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 10.40  
Speed rpm : 1145...1160

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 135.0...155.0  
1000 s: (131.0...159.0)  
Rack travel in mm : 19.50...21.00

Remarks:

#### APPLICATION

Special-purpose vehicle



# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : VOL 10,0 Q6  
Edition : 11.12.87  
Replaces : 9.10.87  
Test oil : ISO-4113

Combination no. : 0 401 846 784

Injection pump  
Pump designation : PE6P110A32ORS3108V  
EP type number : 0 411 816 737  
Governor  
Governor design. : RGV250...1100PA649  
Governor no. : 0 421 813 346

Customer-spec. information  
Customer : VOLVO

Engine : B10/THD101FD

1st version kW : 210,0  
Rated speed : 2200

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
x Wall thickness  
x Length mm : 6.00x1.50x600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values -----

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.00...3.10  
: (2.95...3.15)

Rack travel in mm : 9.00...12.00

E03

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 13.70...13.80

Del. quantity cm<sup>3</sup>/ : 18.0...18.2

100 s: (17.7...18.5)

Spread cm<sup>3</sup> : 0.4

100 s: (0.7)

2nd speed rpm : 250,0

Rack travel in mm : 5.3...5.5

Del. quantity cm<sup>3</sup>/ : 3.0...3.4

100 s: (2.7...3.6)

Spread cm<sup>3</sup> : 0.3

100 s: (0.6)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 250  
travel mm : 1.10...1.30

2nd speed rpm : 500  
travel mm : 4.10...4.90

3rd speed rpm : 700  
travel mm : 6.30...6.70

4th speed rpm : 950  
travel mm : 6.30...6.70

5th speed rpm : 1100  
travel mm : 7.00...7.50

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1175

Rack travel in mm : 15.20...17.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700

Aneroid pressure h: 1200

Del. quantity : 180.0...182.0

1000 : (177.0...185.0)

Spread        cm<sup>3</sup> : 4.00  
              1000 : (7.50)

#### RATED SPEED

1st version  
Control lever  
position degrees: 61...69

Testing:  
1st rack travel in: 12.70  
Speed        rpm : 1160...1170  
2nd rack travel in: 4.00  
Speed        rpm : 1240...1270  
4th rack travel in: 1350  
Speed        rpm : 0.00...1.00

LOW IDLE 1  
Control lever  
position degrees: 7...15

Testing:  
Speed        rpm : 100  
Minimum rack travel: 6.80  
Speed        rpm : 250  
Rack travel in mm : 5.30...5.50  
Rack travel in mm : 2.00  
Speed        rpm : 345...405

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed        rpm : 500  
Rack travel in mm : 1200  
Contr.-rod trav.mm: 13.70...13.80

Measurement  
Speed        1/min : 500

1st pressure hPa : -  
Rack travel in m: 9.60...9.90  
2nd pressure hPa : 300  
Rack travel in m: 10.00...10.10  
3rd pressure hPa : 870  
Rack travel in m: 13.10...13.30

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: -  
Speed        rpm : 700  
Del.quantity cm<sup>3</sup>/ : 106.0...108.0  
              1000 s: (103.0...111.0)

#### BREAKAWAY

E04

1st version  
1mm rack travel less than

full load rack tr: 12.70  
Speed        rpm : 1160...1170

#### STARTING FUEL DELIVERY

Speed        rpm : 100  
Del.quantity cm<sup>3</sup>/ : 160.0...190.0  
              1000 s: (-)  
Rack travel in mm : 20.00...21.00

#### LOW IDLE

Speed        rpm : 250  
Rack travel in mm : 5.30...5.50  
Del.quantity cm<sup>3</sup>/ : 30.0...34.0  
              1000 s: (27.5...36.5)  
Spread        cm<sup>3</sup> : 3.00  
              1000 s: (6.00)

Remarks:

:  
Check electrically unlatched starting  
fuel delivery (EES) with 24 volt.

On activation of the starting solenoid,  
the start position must be reached.

Delivery-valve spring pre-tension =  
2.40...2.60 mm.  
Permissible alteration from 2.20...2.90  
mm

APPLICATION  
Omnibus

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB 11,0 E 8  
Edition : 15.01.88  
Replaces : 9.3.87  
Test oil : ISO-4113

Combination no. : 0 401 846 801

Injection pump  
Pump designation : PE6P120A320LS3810-10  
EP type number : 0 411 826 734  
Governor  
Governor design. : RQV350...1150PA720-3  
Governor no. : 0 421 813 624

Customer-spec. information  
Customer : DAIMLER-BENZ

Engine : OM421A

1st version kW : 184.0  
Rated speed : 2300

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
quantity min. 1/h: 100...120

Test nozzle holder  
assembly : 1 688 901 019

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
x Wall thickness  
x Length mm : 6.00X1.50X1000

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values -----

# BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.00...4.10  
                  : (3.95...4.15)  
Rack travel in mm : 9.00...12.00  
Firing order : 6- 3- 5- 2- 4- 1

Phasing : 0-45-120-165-240-285

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

## BASIC SETTING

1st speed rpm : 1150

Rack travel in mm : 11.00...11.10

Del. quantity cm3/ : 16.3...16.5

100 s: (16.0...16.8)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 350.0

Rack travel in mm : 4.8...5.0

Del. quantity cm3/ : 1.4...2.0

100 s: (1.1...2.3)

Spread cm3 : 0.8

100 s: (1.2)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 350  
travel mm : 1.60...1.80

2nd speed rpm : 600  
travel mm : 3.60...3.80

3rd speed rpm : 1200  
travel mm : 8.00...8.30

4th speed rpm : 1300  
travel mm : 9.10...9.60

## GUIDE SLEEVE POSITION

Control-lever position  
Degree: -1

Speed rpm : 1250

Rack travel in mm : 15.20...17.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
Speed rpm : 1150

Aneroid pressure h: 700  
Del.quantity : 163.0...165.0  
1000 : (160.0...168.0)  
Spread cm<sup>3</sup> : 5.00  
1000 : (9.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 58...66

Testing:  
1st rack travel in: 10.00  
Speed rpm : 1175...1185  
2nd rack travel in: 4.00  
Speed rpm : 1260...1290  
4th rack travel in: 1360  
Speed rpm : 0.00...1.50

LOW IDLE 1  
Control lever  
position degrees: 7...15

Testing:  
Speed rpm : 100  
Minimum rack travel: 6.70  
Speed rpm : 350  
Rack travel in mm : 4.80...5.00

CONSTANT REGULATION  
Speed rpm : 350...500

TORQUE CONTROL  
Dimension a mm : -  
Torque control curve - 1st version  
1st speed rpm : 1150  
Rack travel in m: 11.00...11.10  
2nd speed rpm : 850  
Rack travel in m: 11.30...11.50  
3rd speed rpm : 950  
Rack travel in m: 11.10...11.30

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 500  
Rack travel in mm : -  
Contr.-rod trav.mm: 10.60...10.90

Measurement  
Speed 1/min : 500

1st pressure hPa : 450  
Rack travel in m: 10.90...11.10

#### START CUT-OUT

E06

Speed 1/min : 270 (290)

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: 700  
Speed rpm : 600  
Del.quantity cm<sup>3</sup>/ : 170.0...176.0  
1000 s: (167.0...179.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)  
Aneroid pressure h: 700  
Speed rpm : 1150  
Del.quantity cm<sup>3</sup>/ : 128.0...131.0 \*  
1000 s: (125.0...134.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm<sup>3</sup>/ : 146.0...148.0  
1000 s: (143.0...151.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)

#### BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 10.00  
Speed rpm : 1175...1185

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 140.0...160.0  
1000 s: (136.0...164.0)

Remarks: :

\* = Set at reduced-delivery stop.

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : VOL 12,2 A1  
Edition : 11.12.87  
Replaces : 12.9.86  
Test oil : ISO-4113  
  
Combination no. : 0 401 846 826  
  
Injection pump  
Pump designation : PE6P120A32ORS3178  
EP type number : 0 411 826 752  
Governor  
Governor design. : RQV250...102SPA657-10  
Governor no. : 0 421 813 567

Customer-spec. information  
Customer : VOLVO

Engine : TD122FS

1st version kW : 287.0  
Rated speed : 2050

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 1 688 901 019

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
x Wall thickness  
x Length mm : 6.00X1.50X1000

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values -----

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

E07

Prestroke mm : 3.60...3.70  
                  : (3.55...3.75)  
Rack travel in mm : 9.00...12.00  
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 14.00...14.10

Del. quantity cm<sup>3</sup>/ : 25.2...25.4

100 s: (24.9...25.7)

Spread cm<sup>3</sup> : 0.5

100 s: (0.9)

2nd speed rpm : 250.0

Rack travel in mm : 4.8...5.1

Del. quantity cm<sup>3</sup>/ : 1.8...2.3

100 s: (1.5...2.5)

Spread cm<sup>3</sup> : 0.5

100 s: (0.7)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1090

Rack travel in mm : 15.20...17.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700

Aneroid pressure h: 1200

Del. quantity : 252.0...254.0

1000 : (249.0...257.0)

Spread cm<sup>3</sup> : 5.00

1000 : (9.00)

## RATED SPEED

1st version

Control lever

position degrees: 61...69

Testing:

1st rack travel in: 13.00

Speed rpm : 1055...1065

2nd rack travel in: 4.00  
Speed rpm : 1140...1170  
4th rack travel in: 1250  
Speed rpm : 0.00...1.00

#### LOW IDLE 1

Control lever  
position degrees: 6...14

#### Testing:

Speed rpm : 100  
Minimum rack travel: 6.40  
Speed rpm : 250  
Rack travel in mm : 4.80...5.10

#### CONSTANT REGULATION

Speed rpm : 250...400

Aneroid/Altitude  
Compensator Test

#### 1st version

##### Setting

Speed rpm : 500  
Rack travel in mm : 1200  
Contr.-rod trav.mm: 14.00...14.10

##### Measurement

Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 9.90...10.10  
2nd pressure hPa : 90  
Rack travel in m: 10.20...10.30  
3rd pressure hPa : 870  
Rack travel in m: 13.70...13.90

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: -  
Speed rpm : 700  
Del.quantity cm<sup>3</sup>/ : 163.0...165.0  
1000 s: (160.0...168.0)

#### BREAKAWAY

#### 1st version

1mm rack travel less than

full load rack tr: 13.00  
Speed rpm : 1055...1065

#### STARTING FUEL DELIVERY

Speed rpm : 100

E08

Del.quantity cm<sup>3</sup>/ : 230.0...250.0  
1000 s: (226.0...254.0)  
Rack travel in mm : 20.00...21.00

#### LOW IDLE

Speed rpm : 250  
Rack travel in mm : 4.80...5.10  
Del.quantity cm<sup>3</sup>/ : 18.0...23.0  
1000 s: (15.5...25.5)  
Spread cm<sup>3</sup> : 5.00  
1000 s: (7.00)

Remarks:

:

Delivery-valve spring pre-tension =  
2.40...2.60 mm.  
Permissible alteration from 2.20...2.90  
mm

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB 14,7 A 5  
Edition : 21.12.87  
Replaces : 14.8.87  
Test oil : ISO-4113

Combination no. : 0 402 648 825

Injection pump  
Pump designation : PE8P120A32OLS7801  
EP type number : 0 412 628 806  
Governor  
Governor design. : RQV300..1050PA797-3  
Governor no. : 0 421 813 627

Customer-spec. information  
Customer : DAIMLER-BENZ

Engine : OM442 A

1st version kW : 260.0  
Rated speed : 2100

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
quantity min. 1/h: 100...120

Test nozzle holder  
assembly : 1 688 901 019

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
x Wall thickness  
x Length mm : 6.00x1.50x1000

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values -----

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30  
                  : (5.15...5.35)  
Rack travel in mm : 20.00...21.00  
Firing order : 8- 7- 2- 6- 3- 5-  
                  4- 1

Phasing : 0-45-90-135-180-225-  
                  270-315  
Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 8

## BASIC SETTING

1st speed rpm : 600  
-----  
Rack travel in mm : 13.90...14.00  
-----  
Del. quantity cm3/ : 19.6...19.8  
-----  
100 s: (19.3...20.1)  
-----  
Spread cm3 : 0.5  
-----  
100 s: (0.9)  
-----

2nd speed rpm : 300.0  
Rack travel in mm : 6.2...6.6  
Del. quantity cm3/ : 1.6...2.2  
100 s: (1.3...2.5)  
Spread cm3 : 0.6  
100 s: (1.0)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 300  
travel mm : 1.20...1.40  
2nd speed rpm : 600  
travel mm : 4.90...5.10  
3rd speed rpm : 1075  
travel mm : 7.40...7.60  
4th speed rpm : 1100  
travel mm : 8.00...8.20  
5th speed rpm : 1150  
travel mm : 9.00...9.20

## GUIDE SLEEVE POSITION

Control-lever position  
Degree: -1  
Speed rpm : 1090  
Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
Speed rpm : 600  
Aneroid pressure h: 650  
Del.quantity : 196.0...198.0  
1000 : (193.0...201.0)  
Spread cm3 : 5.00  
1000 : (9.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 49...57

Testing:  
1st rack travel in: 11.80  
Speed rpm : 1090...1100  
2nd rack travel in: 4.00  
Speed rpm : 1155...1185  
4th rack travel in: 1300  
Speed rpm : 0.00...1.50

LOW IDLE 1  
Control lever  
position degrees: 15...23

Testing:  
Speed rpm : 100  
Minimum rack trave: 7.70  
Speed rpm : 300  
Rack travel in mm : 6.20...6.40

CONSTANT REGULATION  
Speed rpm : 300...450

TORQUE CONTROL  
Dimension a mm : 1.40  
2nd speed rpm : 1050  
Rack travel in m: 12.60...12.80  
3rd speed rpm : 850  
Rack travel in m: 13.70...13.90  
4th speed rpm : 700  
Rack travel in m: 14.20...14.40

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 600  
Rack travel in mm : 650  
Contr.-rod trav.mm: 13.80...14.00

Measurement  
Speed 1/min : 600

1st pressure hPa : 300  
Rack travel in m: 12.10...12.30

2nd pressure hPa : 400  
Rack travel in m: 13.10...13.40  
3rd pressure hPa : 850  
Rack travel in m: 13.90...14.00

#### START CUT-OUT

Speed 1/min : 220 (240)

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: 1050  
Speed rpm : 1050  
Del.quantity cm3/ : 175.0...179.0  
1000 s: (172.0...182.0)  
Spread cm3 : 8.00  
1000 s: (12.0)  
Aneroid pressure h: 1050  
Speed rpm : 700  
Del.quantity cm3/ : 209.0...213.0  
1000 s: (206.0...216.0)  
Spread cm3 : 8.00  
1000 s: (12.0)  
Aneroid pressure h: 1050  
Speed rpm : 850  
Del.quantity cm3/ : 203.0...207.0  
1000 s: (200.0...210.0)  
Spread cm3 : 8.00  
1000 s: (12.0)

#### BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 11.80  
Speed rpm : 1090...1100

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 175.0...190.0  
1000 s: (171.0...194.0)

Remarks:



# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : STE 6,5 L  
Edition : 11.12.87  
Replaces : -  
Test oil : ISO-4113  
Combination no. : 0 403 546 012  
Injection pump  
Pump designation : PE6MW100/72ORS1157  
EP type number : 0 413 506 103  
Governor  
Governor design. : RQV250...1200MW93-2  
Governor no. : 0 420 083 138

Customer-spec. information  
Customer : STEYR

Engine : WD 612.93

1st version kW : 165.0  
Rated speed : 2400

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 457 413 010

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter  
x Wall thickness : 6.00x2.00x600  
x Length mm

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values -----

## BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.00...3.10  
: (2.95...3.15)

Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

## BASIC SETTING

1st speed rpm : 1200

Rack travel in mm : 14.30...14.40

Del. quantity cm<sup>3</sup>/ : 13.1...13.3

100 s: (12.9...13.5)

Spread cm<sup>3</sup> : 0.3

100 s: (0.6)

2nd speed rpm : 250.0

Rack travel in mm : 7.2...7.3

Del. quantity cm<sup>3</sup>/ : 1.2...1.6

100 s: (1.0...1.8)

Spread cm<sup>3</sup> : 0.3

100 s: (0.5)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 1230

travel mm : 8.20...8.50

2nd speed rpm : 1340

travel mm : 10.00...10.40

3rd speed rpm : 250

travel mm : 0.70...1.10

4th speed rpm : 700

travel mm : 4.00...4.60

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1230

Rack travel in mm : 15.20...17.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1200

Aneroid pressure h: 900

Del. quantity : 131.0...133.0

1000 : (129.0...135.0)

Spread cm<sup>3</sup> : 3.50

1000 : (6.00)

## RATED SPEED

1st version  
Control lever  
position degrees: 41...49

Setting point:  
Speed rpm : 1230  
Rack travel in mm : 16.5

Testing:  
1st rack travel in: 13.30  
Speed rpm : 1240...1250  
2nd rack travel in: 4.00  
Speed rpm : 1310...1340  
4th rack travel in: 1400  
Speed rpm : 0.00...1.00

LOW IDLE 1  
Control lever  
position degrees: 9...17  
Setting point w/out bumper spring  
Speed rpm : 250  
Rack travel in mm : 7.2

Testing:  
Speed rpm : 100  
Minimum rack trave: 8.80  
Speed rpm : 250  
Rack travel in mm : 7.20...7.30

CONSTANT REGULATION  
Speed rpm : 260...460

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 500  
Rack travel in mm : -  
Contr.-rod trav.mm: 11.90...12.00

Measurement  
Speed 1/min : 500

1st pressure hPa : 430  
Rack travel in m: 12.50...12.60  
2nd pressure hPa : 580  
Rack travel in m: 13.60...13.90  
3rd pressure hPa : 900  
Rack travel in m: 14.30...14.40

START CUT-OUT

Speed 1/min : 200 (220)

FUEL DELIVERY CHARACTERISTICS

1st version

E12

Aneroid pressure h: 900  
Speed rpm : 700  
Del.quantity cm3/ : 130.5...134.5  
1000 s: (128.5...136.0)  
Spread cm3 : 3.50  
1000 s: (7.00)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 79.5...81.5  
1000 s: (77.5...83.5)

BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 13.30  
Speed rpm : 1240...1250

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 155.0...165.0  
1000 s: (152.0...168.0)

LOW IDLE

Speed rpm : 250  
Rack travel in mm : 7.20...7.30  
Del.quantity cm3/ : 12.0...16.0  
1000 s: (10.0...18.0)  
Spread cm3 : 3.50  
1000 s: (5.50)

Remarks:

:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : KHD 13,4 D4  
Edition : 02.11.87  
Replaces : 20.08.87  
Test oil : ISO-4113

Combination no. : 0 403 548 014

Injection pump  
Pump designation : PE8MW100/720LS1128  
EP type number : 0 413 508 103  
Governor  
Governor design. : RQ300...1150MW63-2  
Governor no. : 0 420 082 019

Customer-spec. information  
Customer : KHD

Engine : BF 8L 513

1st version kW : 235.0  
Rated speed : 2300

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 000

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 172...175

Test lines : 1 680 740 014

Outside diameter  
x Wall thickness  
x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values -----

## BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.10...3.20  
: (3.05...3.25)

Rack travel in mm : 9.00...12.00

Firing order : 1- 8- 7- 2- 6- 5-  
4- 3

Phasing : 0-45-90-135-180-225-  
270-315  
Tolerance + - ° : 0.50 (0.75)

## BASIC SETTING

1st speed rpm : 1150

Rack travel in mm : 12.80...12.90

Del. quantity cm<sup>3</sup>/ : 14.1...14.3

100 s: (13.9...14.5)

Spread cm<sup>3</sup> : 0.3

100 s: (0.6)

2nd speed rpm : 300.0

Rack travel in mm : 6.5...6.6

Del. quantity cm<sup>3</sup>/ : 1.3...1.7

100 s: (1.1...1.9)

Spread cm<sup>3</sup> : 0.3

100 s: (0.5)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 1280

travel mm : 9.00...9.80

2nd speed rpm : 1150

travel mm : 6.60...6.80

3rd speed rpm : 650

travel mm : 5.80...6.20

4th speed rpm : 300

travel mm : 1.20...2.00

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 600

Rack travel in mm : 19.20...20.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1150

Aneroid pressure h: 900

Del. quantity : 141.0...143.0

1000 : (139.0...145.0)

Spread cm<sup>3</sup> : 3.50

1000 : (6.00)

## RATED SPEED

1st version  
Control lever  
position degrees: 34...42

Setting point:  
Speed rpm : 600  
Rack travel in mm : 20.0

Testing:  
1st rack travel in: 11.80  
Speed rpm : 1190...1200  
2nd rack travel in: 4.00  
Speed rpm : 1270...1300  
4th rack travel in: 1370  
Speed rpm : 0.00...1.00

LOW IDLE 1  
Control lever  
position degrees: 8...16  
Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 6.5

Testing:  
Speed rpm : 100  
Minimum rack travel: 8.30  
Speed rpm : 300  
Rack travel in mm : 6.50...6.60

CONSTANT REGULATION  
Speed rpm : 330...400

TORQUE CONTROL  
Torque control curve - 1st version  
1st speed rpm : 1150  
Rack travel in m: 12.80...12.90  
2nd speed rpm : 700  
Rack travel in m: 13.80...13.90  
3rd speed rpm : 950  
Rack travel in m: 13.10...13.40

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 500  
Rack travel in mm : 480  
Contr.-rod trav.mm: 13.30...13.40

Measurement  
Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 11.70...11.80  
2nd pressure hPa : 330  
Rack travel in m: 12.10...12.40  
3rd pressure hPa : 900

Rack travel in m: 13.80...13.90

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: 900  
Speed rpm : 700  
Del.quantity cm3/ : 153.0...155.0  
1000 s: (151.0...157.0)  
Spread cm3 : 5.00  
1000 s: (7.00)  
Aneroid pressure h: -  
Speed rpm : 450  
Del.quantity cm3/ : 107.0...109.0  
1000 s: (105.0...111.0)

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 11.80  
Speed rpm : 1190...1200

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 135.0...155.0  
1000 s: (132.0...158.0)

#### LOW IDLE

Speed rpm : 300  
Rack travel in mm : 6.50...6.60  
Del.quantity cm3/ : 13.0...17.0  
1000 s: (11.0...19.0)  
Spread cm3 : 3.50  
1000 s: (5.50)

Remarks:

Check electrically unlatched starting  
fuel delivery (EES) with 24 volt.

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : CUM 8,3 B 2  
 Edition : 08.01.88  
 Replaces : 12.11.87  
 Test oil : ISO-4113

Combination no. : 9 400 083 452

Injection pump  
 Pump designation : PES6A100D320/3RS2691  
 -2

EP type number : 9 410 230 028  
 Governor  
 Governor design. : RQV350...1250AB1225R  
 Governor no. : 9 420 080 224

Customer-spec. information  
 Customer : CUMMINS

Engine : 6 C 8.3L

1st version kW : 123.0  
 Rated speed : 2500

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 000

Inlet press., bar : 1.00

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter  
 x Wall thickness : 6.00X2.00X600  
 x Length mm

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values -----

## BEGINNING OF DELIVERY

Test pressure, bar : 25...27

Prestroke mm : 2.80...2.90  
 : (2.75...2.95)

Rack travel in mm : 9.00...12.00  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BEGINNING OF DELIVERY DIFFERENCE

betw. rack tra. m: 9.00...12.00  
 & maximum rack tra: 21.00  
 Difference ° CS : 3.00...4.00

## BASIC SETTING

1st speed rpm : 1250

Rack travel in mm : 11.20...11.30

Del. quantity cm<sup>3</sup>/ : 10.3...10.5

100 s: (10.1...10.7)

Spread cm<sup>3</sup> : 0.3

100 s: (0.6)

2nd speed rpm : 350.0

Rack travel in mm : 5.4...5.6

Del. quantity cm<sup>3</sup>/ : 1.4...1.8

100 s: (1.1...2.0)

Spread cm<sup>3</sup> : 0.3

100 s: (0.5)

(B) Setting of injection pump  
 with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 350

travel mm : 1.60...2.50

2nd speed rpm : 500

travel mm : 3.80...4.20

3rd speed rpm : 900

travel mm : 5.60...6.00

4th speed rpm : 1265

travel mm : 8.50...8.60

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1300

Rack travel in mm : 15.20...17.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1250  
Del.quantity : 103.5...105.5  
1000 : (101.5...107.5)  
Spread cm3 : 3.50  
1000 : (6.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 115...123

#### Testing:

1st rack travel in: 10.20  
Speed rpm : 1290...1300  
2nd rack travel in: 4.00  
Speed rpm : 1390...1420  
4th rack travel in: 1500  
Speed rpm : 0.00...1.00

#### LOW IDLE 1

Control lever  
position degrees: 67...75

#### Testing:

Speed rpm : 100  
Minimum rack travel: 10.00  
Speed rpm : 350  
Rack travel in mm : 5.40...5.60  
Rack travel in mm : 2.00  
Speed rpm : 400...460

#### CONSTANT REGULATION

Speed rpm : 390...460

#### TORQUE CONTROL

Dimension a mm : 0.60  
Torque control curve - 1st version  
1st speed rpm : 1250  
Rack travel in m: 11.20...11.30  
2nd speed rpm : 500  
Rack travel in m: 11.80...11.90  
3rd speed rpm : 600  
Rack travel in m: 11.50...11.70  
4th speed rpm : 750  
Rack travel in m: 11.30...11.60

#### START CUT-OUT

Speed 1/min : 290 (310)

#### FUEL DELIVERY CHARACTERISTICS

##### 1st version

Speed rpm : 500  
Del.quantity cm3/ : 101.0...104.0  
1000 s: (98.5...106.5)  
Speed rpm : 600

Del.quantity cm3/ : 103.5...106.5  
1000 s: (101.0...109.0)

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 10.20  
Speed rpm : 1290...1300

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 168.0...182.0  
1000 s: (165.0...185.0)  
Rack travel in mm : 19.00...21.00

#### LOW IDLE

Speed rpm : 350  
Rack travel in mm : 5.40...5.60  
Del.quantity cm3/ : 14.0...18.0  
1000 s: (11.5...20.5)  
Spread cm3 : 3.50  
1000 s: (5.50)

#### Remarks:

:  
Start-of-delivery mark 11° cam angle  
after start of delivery cyl. 1

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MWM 3,9 D  
Edition : 08.01.88  
Replaces : 24.7.87  
Test oil : ISO-4113

Combination no. : 9 400 085 272

Injection pump  
Pump designation : PES4A90D32ORS2744  
EP type number : 9 400 084 012  
Governor  
Governor design. : RSV350...1300A2B2215  
-2R

Governor no. : 9 420 083 234

Customer-spec. information  
Customer : MWM

Engine : TD 229-4

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 046

Inlet press., bar : 1.00

Test nozzle holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter  
x Wall thickness  
x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values -----

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.70...2.80  
: (2.65...2.85)

Rack travel in mm : 9.00...12.00

Firing order : 1- 3- 4- 2

Phasing : 0-90-180-270

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 9.00...12.00

& maximum rack tra: 21.00

Difference ° CS : 3.00...4.00

## BASIC SETTING

1st speed rpm : 1300

Rack travel in mm : 10.60...10.70

Del. quantity cm3/ : 8.9...9.0

100 s: (8.7...9.2)

Spread cm3 : 0.3

100 s: (0.5)

2nd speed rpm : 350.0

Rack travel in mm : 4.9...5.1

Del. quantity cm3/ : 1.1...1.5

100 s: (0.9...1.7)

Spread cm3 : 0.2

100 s: (0.4)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...1.00

Governor spring pre-tension

Click setting x : 5.75

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1300

Del. quantity : 89.0...90.0

1000 : (87.0...92.0)

Spread cm3 : 3.00

1000 : (5.00)

## RATED SPEED

1st version

Control lever

position degrees: 24...32

Testing:

1st rack travel in: 9.60  
Speed rpm : 1340...1350  
2nd rack travel in: 4.00  
Speed rpm : 1410...1440  
4th rack travel in: 1600  
Speed rpm : 0.30...1.70

#### LOW IDLE 1

Control lever  
position degrees: 55...63  
Setting point w/out bumper spring  
Speed rpm : 350  
Rack travel in mm : 4.5

#### Testing:

Speed rpm : 100  
Minimum rack travel: 19.00  
Speed rpm : 350  
Rack travel in mm : 4.90...5.10  
Rack travel in mm : 2.00  
Speed rpm : 540...600

#### TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 1300  
Rack travel in m: 10.60...10.70  
2nd speed rpm : 500  
Rack travel in m: 11.20...11.30  
3rd speed rpm : 800  
Rack travel in m: 10.90...11.20  
4th speed rpm : 900  
Rack travel in m: 10.80...10.90

#### FUEL DELIVERY CHARACTERISTICS

##### 1st version

Speed rpm : 500  
Del. quantity cm3/ : 87.0...89.0  
1000 s: (84.5...91.5)  
Speed rpm : 900  
Del. quantity cm3/ : 89.0...91.0  
1000 s: (86.5...93.5)

#### BREAKAWAY

##### 1st version

1mm rack travel less than

full load rack tr: 9.60  
Speed rpm : 1340...1350

#### INTERMEDIATE RATED SPEED

Rack travel in mm : 4.00

#### STARTING FUEL DELIVERY

Speed rpm : 100

E18

Rack travel in mm : 19.00...21.00

#### LOW IDLE

Speed rpm : 350  
Rack travel in mm : 4.90...5.10  
Del. quantity cm3/ : 11.0...15.0  
1000 s: (9.0...17.0)  
Spread cm3 : 2.50  
1000 s: (4.50)

Remarks:

:



# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB 6,0 E  
Edition : 08.01.88  
Replaces : 24.7.87  
Test oil : ISO-4113

Combination no. : 9 400 085 288

Injection pump  
Pump designation : PES6A90D41ORS2596-1  
EP type number : 9 400 084 008  
Governor  
Governor design. : RQV300...1300AB1066-3L  
Governor no. : 9 420 080 230

Customer-spec. information  
Customer : DAIMLER-BENZ

Engine : OM 366 A

1st version kW : 127.0  
Rated speed : 2600

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 047

Inlet press., bar : 1.00

Test nozzle holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter  
x Wall thickness  
x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values -----

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.00...2.10  
: (1.95...2.15)

Rack travel in mm : 9.00...12.00  
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1300

Rack travel in mm : 13.10...13.20

Del. quantity cm3/ : 8.6...8.7

100 s: (8.4...8.9)

Spread cm3 : 0.3

100 s: (0.5)

2nd speed rpm : 300.0

Rack travel in mm : 8.4...8.6

Del. quantity cm3/ : 1.0...1.4

100 s: (0.8...1.6)

Spread cm3 : 0.2

100 s: (0.4)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 300

travel mm : 0.90...1.30

2nd speed rpm : 500

travel mm : 2.20...2.60

3rd speed rpm : 800

travel mm : 4.30...4.70

4th speed rpm : 1100

travel mm : 6.60...6.40

5th speed rpm : 1375

travel mm : 8.40...8.50

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1375

Rack travel in mm : 15.20...17.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1300

Aneroid pressure h: 1000

Del. quantity : 86.0...87.0

1000 : (84.0...89.0)

Spread cm<sup>3</sup> : 3.00  
1000 : (5.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 116...124

Testing:  
1st rack travel in: 12.10  
Speed rpm : 1340...1350  
2nd rack travel in: 4.00  
Speed rpm : 1470...1500  
4th rack travel in: 1600  
Speed rpm : 0.00...1.00

LOW IDLE 1  
Control lever  
position degrees: 74...82

Testing:  
Speed rpm : 100  
Minimum rack travel: 10.00  
Speed rpm : 300  
Rack travel in mm : 8.40...8.60  
Rack travel in mm : 2.00  
Speed rpm : 570...630

CONSTANT REGULATION  
Speed rpm : 590...660

TORQUE CONTROL  
Dimension a mm : 1.00  
Torque control curve - 1st version  
1st speed rpm : 1300  
Rack travel in m: 13.10...13.20  
2nd speed rpm : 800  
Rack travel in m: 14.10...14.20  
3rd speed rpm : 1000  
Rack travel in m: 13.90...14.10  
4th speed rpm : 1150  
Rack travel in m: 13.30...13.60

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 500  
Rack travel in mm : 1000  
Contr.-rod trav.mm: 14.10...14.20

Measurement  
Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 12.80...12.90  
2nd pressure hPa : 750

E20

Rack travel in m: 13.90...14.00  
3rd pressure hPa : 650  
Rack travel in m: 13.20...13.40

#### START CUT-OUT

Speed 1/min : 240 (260)

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: 1000  
Speed rpm : 800  
Del.quantity cm<sup>3</sup>/ : 89.0...91.0  
1000 s: (86.5...93.5)  
Aneroid pressure h: 1000  
Speed rpm : 1000  
Del.quantity cm<sup>3</sup>/ : 90.0...92.0  
1000 s: (87.5...94.5)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm<sup>3</sup>/ : 66.5...68.5  
1000 s: (64.5...70.5)

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 12.10  
Speed rpm : 1340...1350

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 71.0...81.0  
1000 s: (68.0...84.0)  
Rack travel in mm : 14.70...15.70

Remarks:  
:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : FOR 6,6 K  
Edition : 08.01.88  
Replaces : 12.11.87  
Test oil : ISO-4113

Combination no. : 9 400 085 292

Injection pump  
Pump designation : PES6A9SD410RS2742  
EP type number : 9 400 084 011  
Governor  
Governor design. : RQV350...1300AB1220-1L  
Governor no. : 9 420 080 239

Customer-spec. information  
Customer : FORD FNH

Engine : 6,6 L

1st version kW : 123.0  
Rated speed : 2600

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.00

Test nozzle holder  
assembly : 1 688 901 017

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,6

Test lines : 1 680 750 015

Outside diameter  
x Wall thickness  
x Length mm : 6.00X1.50X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values -----

BEGINNING OF DELIVERY  
Test pressure, bar: 25...27

Prestroke mm : 3.15...3.25  
                  : (3.10...3.30)  
Rack travel in mm : 9.00...12.00  
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 9.00...12.00  
& maximum rack tra: 21.00  
Difference ° CS : 2.00...3.00

## BASIC SETTING

1st speed rpm : 1300

Rack travel in mm : 12.80...12.90

Del. quantity cm<sup>3</sup>/ : 9.4...9.6

100 s: (9.1...9.8)

Spread cm<sup>3</sup> : 0.3

100 s: (0.6)

2nd speed rpm : 350.0

Rack travel in mm : 7.4...7.6

Del. quantity cm<sup>3</sup>/ : 2.2...2.6

100 s: (1.9...2.8)

Spread cm<sup>3</sup> : 0.3

100 s: (0.5)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 350

travel mm : 1.10...1.80

2nd speed rpm : 500

travel mm : 2.70...3.10

3rd speed rpm : 700

travel mm : 3.50...3.90

4th speed rpm : 1000

travel mm : 4.90...5.30

5th speed rpm : 1450

travel mm : 8.50...8.60

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1540

Rack travel in mm : 8.00...0.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1300  
Aneroid pressure h: 600  
Del.quantity : 94.0...96.0  
1000 : (91.5...98.5)  
Spread cm<sup>3</sup> : 3.50  
1000 : (6.00)

RATED SPEED

1st version

Control lever  
position degrees: 111...119

Testing:

1st rack travel in: 11.80  
Speed rpm : 1340...1350  
2nd rack travel in: 4.00  
Speed rpm : 1480...1510  
4th rack travel in: 1600  
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever  
position degrees: 68...76

Testing:

Speed rpm : 100  
Minimum rack trave: 10.00  
Speed rpm : 350  
Rack travel in mm : 7.40...7.60  
Rack travel in mm : 2.00  
Speed rpm : 700...760

CONSTANT REGULATION

Speed rpm : 370...440

Aneroid/Altitude  
Compensator Test

1st version

Setting

Speed rpm : 500  
Rack travel in mm : 600  
Contr.-rod trav.mm: 12.80...12.90

Measurement

Speed 1/min : 500

1st pressure hPa : -

Rack travel in m: 10.80...10.90

2nd pressure hPa : 300

Rack travel in m: 11.10...11.30

3rd pressure hPa : 400

Rack travel in m: 12.30...12.40

START CUT-OUT

Speed 1/min : 290 (310)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 600  
Speed rpm : 800  
Del.quantity cm<sup>3</sup>/ : 83.5...87.5  
1000 s: (81.5...89.5)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm<sup>3</sup>/ : 58.5...60.5  
1000 s: (56.0...63.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.80  
Speed rpm : 1340...1350

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 180.0...200.0  
1000 s: (-)  
Rack travel in mm : 20.00...21.00

LOW IDLE

Speed rpm : 350  
Rack travel in mm : 7.40...7.60  
Del.quantity cm<sup>3</sup>/ : 22.0...26.0  
1000 s: (19.5...28.5)  
Spread cm<sup>3</sup> : 3.50  
1000 s: (5.50)

Remarks:

:

Set shutoff stop 1.5...2.0 mm before  
shutoff.

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB 11,8 0 1  
Edition : 08.01.88  
Replaces : 24.7.87  
Test oil : ISO-4113

Combination no. : 9 400 087 256

Injection pump  
Pump designation : PE6P110A72ORS371  
EP type number : 0 411 816 123  
Governor  
Governor design. : RQ250/1100PA419R  
Governor no. : 9 420 080 138

Customer-spec. information  
Customer : DAIMLER-BENZ

Engine : OM 355 A

1st version kW : 210.0  
Rated speed : 2200

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 000

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 172...175

Test lines : 1 680 750 004

Outside diameter  
x Wall thickness  
x Length mm : 6.00x1.50x600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values -----

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.80...2.90  
: (2.75...2.95)

Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 11.70...11.80

Del. quantity cm<sup>3</sup>/ : 16.0...16.2

100 s: (15.7...16.5)

Spread cm<sup>3</sup> : 0.4

100 s: (0.7)

2nd speed rpm : 250.0

Rack travel in mm : 5.9...6.1

Del. quantity cm<sup>3</sup>/ : 1.1...1.6

100 s: (0.8...1.8)

Spread cm<sup>3</sup> : 0.4

100 s: (0.7)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 600

Rack travel in mm : 15.60...16.40

## FULL LOAD DELIV. AT FULL LOAD STOP

### 1st version

Speed rpm : 1100

Del. quantity : 160.0...162.0

1000 : (157.0...165.0)

Spread cm<sup>3</sup> : 4.00

1000 : (7.50)

## RATED SPEED

### 1st version

Setting point:

Speed rpm : 600

Rack travel in mm : 16.0

Testing:

1st rack travel in: 10.70

Speed rpm : 1145...1160

2nd rack travel in: 4.00

Speed rpm : 1210...1240

4th rack travel in: 1300

Speed rpm : 0.00...1.00

#### LOW IDLE 1

Setting point w/out bumper spring

Speed rpm : 250

Rack travel in mm : 6.0

#### Testing:

Speed rpm : 100

Minimum rack trave: 7.50

Speed rpm : 250

Rack travel in mm : 5.90...6.10

Rack travel in mm : 2.00

Speed rpm : 390...430

Speed rpm : 500

Maximum rack trave: 1.00

#### FUEL DELIVERY CHARACTERISTICS

##### 1st version

Speed rpm : 500

Del.quantity cm3/ : 149.0...153.0

1000 s: (146.0...156.0)

#### RACK STOP ADJUSTMENT

Speed rpm : 500

#### BREAKAWAY

##### 1st version

1mm rack travel less than

full load rack tr: 10.70

Speed rpm : 1145...1160

#### STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/ : 144.0...160.0

1000 s: (-)

Rack travel in mm : 12.70...13.10

Remarks:

:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : VOL 10,0011  
 Edition : 08.01.88  
 Replaces :  
 Test oil : ISO-4113  
 Combination no. : 9 400 087 295  
 Injection pump  
 Pump designation : PE6P110A32ORS3108Y  
 EP type number : 0 411 816 729  
 Governor  
 Governor design. : RQV250...1100PA589-1  
 Governor no. : 9 420 080 166

Customer-spec. information  
 Customer : VOLVO

Engine : THD 100 EC

1st version kW : 180.0  
 Rated speed : 2200

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values -----

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.00...3.10  
 : (2.95...3.15)

Rack travel in mm : 9.00...12.00

E25

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 11.10...11.20

Del. quantity cm<sup>3</sup>/ : 13.8...14.0

100 s: (13.5...14.3)

Spread cm<sup>3</sup> : 0.4

100 s: (0.7)

2nd speed rpm : 250.0

Rack travel in mm : 5.0...5.2

Del. quantity cm<sup>3</sup>/ : 3.2...3.6

100 s: (2.9...3.8)

Spread cm<sup>3</sup> : 0.3

100 s: (0.6)

(B) Setting of injection pump  
 with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 250

travel mm : 1.10...1.30

2nd speed rpm : 500

travel mm : 4.10...4.90

3rd speed rpm : 700

travel mm : 6.30...6.70

4th speed rpm : 950

travel mm : 6.30...6.70

5th speed rpm : 1100

travel mm : 7.00...7.50

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1175

Rack travel in mm : 15.20...17.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700

Aneroid pressure h: 900

Del. quantity : 138.0...140.0

1000 : (135.0...143.0)

Spread cm<sup>3</sup> : 4.00  
1000 : (7.50)

#### RATED SPEED

1st version  
Control lever  
position degrees: 55...63

Testing:  
1st rack travel in: 10.10  
Speed rpm : 1140...1150  
2nd rack travel in: 4.00  
Speed rpm : 1205...1235  
4th rack travel in: 1350  
Speed rpm : 0.00...1.00

LOW IDLE 1  
Control lever  
position degrees: 8...16

Testing:  
Speed rpm : 100  
Minimum rack travel: 6.70  
Speed rpm : 250  
Rack travel in mm : 5.00...5.20  
Rack travel in mm : 2.00  
Speed rpm : 345...405

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 500  
Rack travel in mm : 900  
Contr.-rod trav.mm: 11.10...11.20

Measurement  
Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 9.60...9.80  
2nd pressure hPa : 275  
Rack travel in m: 9.90...10.00  
3rd pressure hPa : 400  
Rack travel in m: 10.70...10.90

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: -  
Speed rpm : 700  
Del.quantity cm<sup>3</sup>/ : 105.5...108.5  
1000 s: (103.0...111.0)

#### BREAKAWAY

E26

1st version  
1mm rack travel less than

full load rack tr: 10.10  
Speed rpm : 1140...1150

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 170.0...200.0  
1000 s: (166.0...204.0)  
Rack travel in mm : 20.00...21.00

#### LOW IDLE

Speed rpm : 250  
Rack travel in mm : 5.00...5.20  
Del.quantity cm<sup>3</sup>/ : 32.0...36.0  
1000 s: (29.5...38.5)  
Spread cm<sup>3</sup> : 3.00  
1000 s: (6.00)

#### Remarks:

:  
Delivery-valve spring pre-tension =  
2.40...2.60 mm.  
Permissible alteration from 2.20...2.90  
mm



Note remarks

Combination no. : 9 400 087 348

Customer-spec. information  
Customer : CATERPILLAR

1st version kW : 87.2  
Rated speed : 1750

Test oil  
inlet temp. °C : 38...42

Overflow valve : 9 401 087 348

Inlet press., bar : 2.00

Test nozzle holder  
assembly : 1 688 901 017

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0.6

**Test lines** : 1 680 750 008

Outside diameter  
x Wall thickness  
x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values

Test pressure, bar: 2...3

**Phasing** : 0-60-120-180-240-300

Tolerance  $\pm$  <sup>0</sup> : 0.50 (0.75)

Time to cyl. no. : 1

1st speed      rpm : 875

Rack travel in mm : 8.80...8.90

Del. quantity cm<sup>3</sup>/ : 7.1...7.3  
 -----  
 100 s: (6.9...7.5)

Spread      cm<sup>3</sup> : 0.3

100 s: (0,6)

2nd speed      rpm    : 350.0

Rack travel in mm : 6.7...6.9  
Del.quantity cm3/ : 1.0...1.4  
100 s: (0.7...1.6)

Spread cm<sup>3</sup> : 0.3  
100 s: (0.5)

(B) Setting of injection pump  
with governor

1st speed	rpm	: 330
travel mm		: 0.90...1.70
2nd speed	rpm	: 450
travel mm		: 3.20...3.60
3rd speed	rpm	: 650
travel mm		: 5.10...5.50
4th speed	rpm	: 950
travel mm		: 8.40...8.50

## Control-lever position

Speed rpm : 950  
Rack travel in mm : 15.20...17.80

```
1st version
Speed      rpm : 875
Del.quantity : 71.5...73.5
            1000 : (69.5...75.5)
```

Remarks:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : CAT 10,5 I  
Edition : 08.01.88  
Replaces : 6.11.87  
Test oil : ISO-4113

Combination no. : 9 400 087 356

Injection pump  
Pump designation : PES6P100A720LS511  
EP type number : 9 400 087 059  
Governor  
Governor design. : RQV350/840...900PA  
839

Governor no. : 9 420 080 233

Customer-spec. information  
Customer : CATERPILLAR

Engine : 3306 DIT

1st version kW : 190.0  
Rated speed : 1800

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 9 401 087 348

Inlet press., bar : 2.00

Test nozzle holder  
assembly : 1 688 901 017

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter  
x Wall thickness  
x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values -----

## BEGINNING OF DELIVERY

Test pressure, bar: 2...3

F01

Prestroke mm : 2.80...2.90  
: (2.75...2.95)  
Rack travel in mm : 9.00...12.00  
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 900

Rack travel in mm : 12.60...12.70

Del. quantity cm3/ : 18.2...18.4

100 s: (18.0...18.7)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 350.0

Rack travel in mm : 6.4...6.6

Del. quantity cm3/ : 1.3...1.7

100 s: (1.0...1.9)

Spread cm3 : 0.3

100 s: (0.5)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 350

travel mm : 0.50...1.50

2nd speed rpm : 500

travel mm : 2.40...2.60

3rd speed rpm : 750

travel mm : 2.40...2.60

4th speed rpm : 850

travel mm : 4.00...4.50

5th speed rpm : 950

travel mm : 8.50...8.60

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 925

Rack travel in mm : 15.20...17.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 900

Del.quantity : 182.5...184.5  
1000 : (180.0...187.0)  
Spread cm3 : 3.50  
1000 : (6.00)

APPLICATION  
Generator

#### RATED SPEED

1st version  
Control lever  
position degrees: 57...65

Testing:  
1st rack travel in: 11.60  
Speed rpm : 910...920  
2nd rack travel in: 4.00  
Speed rpm : 930...960  
4th rack travel in: 1050  
Speed rpm : 0.00...1.00

LOW IDLE 1  
Control lever  
position degrees: 5...13

Testing:  
Speed rpm : 100  
Minimum rack travel: 7.00  
Speed rpm : 350  
Rack travel in mm : 4.70...4.90  
Rack travel in mm : 2.00  
Speed rpm : 770...830

#### START CUT-OUT

Speed 1/min : 290 (310)

#### BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 11.60  
Speed rpm : 910...920

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 195.0...215.0  
1000 s: (191.0...219.0)  
Rack travel in mm : 14.00...15.00

#### LOW IDLE

Speed rpm : 350  
Rack travel in mm : 4.70...4.90

Remarks:

:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : CAT 10,5 G2  
 Edition : 08.01.88  
 Replaces : 12.11.87  
 Test oil : ISO-4113

Combination no. : 9 400 087 363

Injection pump  
 Pump designation : PES6P100A72QLS502  
 EP type number : 9 400 087 050  
 Governor  
 Governor design. : RQV350...1100PA828  
 Governor no. : 9 420 080 232

Customer-spec. information  
 Customer : CATERPILLAR

Engine : 3306 DITA

1st version kW : 173.7  
 Rated speed : 2200

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 9 401 087 348

Inlet press., bar : 2.00

Test nozzle holder  
 assembly : 1 688 901 017

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values -----

## BEGINNING OF DELIVERY

Test pressure, bar: 2...3

Prestroke mm : 3.95...4.05  
 : (3.90...4.10)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 12.40...12.50

Del. quantity cm3/ : 14.7...14.9

100 s: (14.4...15.1)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 350.0

Rack travel in mm : 6.4...6.6

Del. quantity cm3/ : 1.3...1.7

100 s: (1.0...1.9)

Spread cm3 : 0.3

100 s: (0.5)

(B) Setting of injection pump  
 with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 350  
 travel mm : 1.30...1.50

2nd speed rpm : 500  
 travel mm : 2.90...3.20

3rd speed rpm : 700  
 travel mm : 4.50...4.80

4th speed rpm : 900  
 travel mm : 6.00...6.20

5th speed rpm : 1150  
 travel mm : 8.50...8.60

## GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -1

Speed rpm : 1150

Rack travel in mm : 15.20...17.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100

Aneroid pressure h: 500

Del.quantity : 147.0...149.0  
1000 : (144.5...151.5)  
Spread cm3 : 3.50  
1000 : (6.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 63...71

#### Testing:

1st rack travel in: 11.40  
Speed rpm : 1140...1150  
2nd rack travel in: 4.00  
Speed rpm : 1240...1270  
4th rack travel in: 1350  
Speed rpm : 0.00...1.00

#### LOW IDLE 1

Control lever  
position degrees: 9...17

#### Testing:

Speed rpm : 100  
Minimum rack travel: 8.00  
Speed rpm : 350  
Rack travel in mm : 5.10...5.30  
Rack travel in mm : 2.00  
Speed rpm : 530...590

#### CONSTANT REGULATION

Speed rpm : 370...440

Aneroid/Altitude  
Compensator Test

#### 1st version

##### Setting

Speed rpm : 500  
Rack travel in mm : 500  
Contr.-rod trav.mm: 12.40...12.50

##### Measurement

Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 9.90...10.00  
2nd pressure hPa : 300  
Rack travel in m: 11.70...11.80  
3rd pressure hPa : 200  
Rack travel in m: 10.70...10.90

#### START CUT-OUT

Speed 1/min : 290 (310)

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: 500  
Speed rpm : 700  
Del.quantity cm3/ : 149.0...153.0  
1000 s: (147.0...155.0)  
Spread cm3 : 5.00  
1000 s: (7.00)  
Aneroid pressure h: -  
Speed rpm : 1100  
Del.quantity cm3/ : 108.0...110.0  
1000 s: (105.5...112.0)

#### BREAKAWAY

#### 1st version

1mm rack travel less than

full load rack tr: 11.40  
Speed rpm : 1140...1150

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 157.0...177.0  
1000 s: (153.0...181.0)  
Rack travel in mm : 19.00...21.00

#### LOW IDLE

Speed rpm : 350  
Rack travel in mm : 5.00...5.20

Remarks:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : FOR 6,6 I  
Edition : 08.01.88  
Replaces : 12.11.87  
Test oil : ISO-4113

Combination no. : 9 400 087 375

Injection pump  
Pump designation : PES6P110A72ORS3194  
EP type number : 9 400 087 055  
Governor  
Governor design. : RQV350...1300PA863-5  
Governor no. : 9 420 080 240

Customer-spec. information  
Customer : FORD FNH

Engine : 6,6 LTC

1st version kW : 126.0  
Rated speed : 2600

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 1 688 901 017

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,6

Test lines : 1 680 750 015

Outside diameter  
x Wall thickness  
x Length mm : 6.00x1.50x600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values -----

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.05...4.15  
: (4.00...4.20)  
Rack travel in mm : 9.00...12.00  
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 9.00...12.00  
& maximum rack tra: 21.00  
Difference ° CS : 2.00...3.00

## BASIC SETTING

1st speed rpm : 1300

Rack travel in mm : 14.60...14.70

Del. quantity cm3/ : 11.7...11.9

100 s: (11.5...12.1)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 350.0

Rack travel in mm : 8.6...8.8

Del. quantity cm3/ : 2.0...2.4

100 s: (1.7...2.6)

Spread cm3 : 0.3

100 s: (0.5)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 300

travel mm : 0.90...1.30

2nd speed rpm : 500

travel mm : 2.60...3.00

3rd speed rpm : 800

travel mm : 4.30...4.70

4th speed rpm : 1000

travel mm : 5.20...5.60

5th speed rpm : 1450

travel mm : 8.50...8.60

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1540

Rack travel in mm : 8.00...0.00

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1300  
Aneroid pressure h: 800  
Del.quantity : 117.0...119.0  
1000 : (115.0...121.0)  
Spread cm3 : 5.00  
1000 : (9.00)

## RATED SPEED

1st version

Control lever  
position degrees: 44...52

Testing:

1st rack travel in: 13.60  
Speed rpm : 1360...1370  
2nd rack travel in: 4.00  
Speed rpm : 1520...1550  
4th rack travel in: 1650  
Speed rpm : 0.00...1.00

## LOW IDLE 1

Control lever  
position degrees: 13...21

Testing:

Speed rpm : 100  
Minimum rack travel: 12.00  
Speed rpm : 350  
Rack travel in mm : 8.60...8.80  
Rack travel in mm : 2.00  
Speed rpm : 535...595

## CONSTANT REGULATION

Speed rpm : 430...500

Aneroid/Altitude  
Compensator Test

1st version

Setting

Speed rpm : 500  
Rack travel in mm : 800  
Contr.-rod trav.mm: 14.60...14.70

Measurement

Speed 1/min : 500

1st pressure hPa : -

Rack travel in m: 12.60...12.70

2nd pressure hPa : 580

Rack travel in m: 13.40...13.60

3rd pressure hPa : 620

Rack travel in m: 14.00...14.10

## START CUT-OUT

Speed 1/min : 290 (310)

## FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 800  
Speed rpm : 900  
Del.quantity cm3/ : 100.5...104.5  
1000 s: (98.5...106.5)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 57.0...59.0  
1000 s: (55.0...61.0)

## BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 13.60  
Speed rpm : 1360...1370

## STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 120.0...140.0  
1000 s: (-)  
Rack travel in mm : 20.00...21.00

## LOW IDLE

Speed rpm : 350  
Rack travel in mm : 8.60...8.80  
Del.quantity cm3/ : 20.0...24.0  
1000 s: (17.5...26.5)  
Spread cm3 : 3.50  
1000 s: (5.50)

Remarks:



# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : FOR 7,8 C 1  
Edition : 08.01.88  
Replaces : 12.11.87  
Test oil : ISO-4113

Combination no. : 9 400 087 377

Injection pump  
Pump designation : PES6P110A720RS3193  
EP type number : 9 400 087 057  
Governor  
Governor design. : RSV650...1250P8A530-1  
Governor no. : 9 420 082 324

Customer-spec. information  
Customer : FORD - FNH

Engine : 7.8 l

1st version kW : 165.0  
Rated speed : 2500

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 1 688 901 017

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,6

Test lines : 1 680 750 015

Outside diameter  
x Wall thickness  
x Length mm : 6,00x1,50x600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values -----

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.25...4.35  
: (4.20...4.40)  
Rack travel in mm : 9.00...12.00  
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 9.00...12.00  
& maximum rack tra: 21.00  
Difference ° CS : 2.00...3.00

## BASIC SETTING

1st speed rpm : 1200

Rack travel in mm : 14.00...14.10

Del. quantity cm<sup>3</sup>/ : 13.7...13.9

100 s: (13.5...14.1)

Spread cm<sup>3</sup> : 0.5

100 s: (0.9)

2nd speed rpm : 650.0

Rack travel in mm : 5.9...6.1

Del. quantity cm<sup>3</sup>/ : 1.1...1.5

100 s: (0.8...1.7)

Spread cm<sup>3</sup> : 0.3

100 s: (0.5)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...1.00

Governor spring pre-tension

Click setting x : 3.25

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1200

Aneroid pressure h: 1000

Del. quantity : 137.0...139.0

1000 : (135.0...141.0)

Spread cm<sup>3</sup> : 5.00

1000 : (9.00)

## RATED SPEED

1st version  
Control lever  
position degrees: 49...57

Testing:  
1st rack travel in: 13.00  
Speed rpm : 1260...1270  
2nd rack travel in: 4.00  
Speed rpm : 1305...1325  
4th rack travel in: 1400  
Speed rpm : 0.30...1.70

## LOW IDLE 1

Control lever  
position degrees: 23...31  
Setting point w/out bumper spring  
Speed rpm : 650  
Rack travel in mm : 5.5

Testing:  
Speed rpm : 600  
Minimum rack travel: 10.00  
Speed rpm : 650  
Rack travel in mm : 5.90...6.10  
Rack travel in mm : 2.00  
Speed rpm : 770...830

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 500  
Rack travel in mm : 1000  
Contr.-rod trav.mm: 14.00...14.10

Measurement  
Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 10.40...10.50  
2nd pressure hPa : 600  
Rack travel in m: 13.40...13.50  
3rd pressure hPa : 350  
Rack travel in m: 11.60...11.80

## FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: 1000  
Speed rpm : 800  
Del.quantity cm3/ : 117.5...119.5  
1000 s: (115.5...121.5)  
Aneroid pressure h: -  
Speed rpm : 500

Del.quantity cm3/ : 52.0...54.0  
1000 s: (50.0...56.0)

## BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 13.00  
Speed rpm : 1260...1270

## STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 135.0...155.0  
1000 s: (131.0...159.0)  
Rack travel in mm : 20.00...21.00

## LOW IDLE

Speed rpm : 650  
Rack travel in mm : 5.90...6.10  
Del.quantity cm3/ : 11.0...15.0  
1000 s: (8.5...17.5)  
Spread cm3 : 3.50  
1000 s: (5.50)

Remarks:

:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : FOR 7,8 D  
Edition : 08.01.88  
Replaces : 12.11.87  
Test oil : ISO-4113

Combination no. : 9 400 087 379

Injection pump  
Pump designation : PES6P110A720RS3150  
EP type number : 9 400 087 046  
Governor  
Governor design. : RQV350...1200PA863  
Governor no. : 9 420 080 242

Customer-spec. information  
Customer : FORD ( FNH )

Engine : 7.8 L TC

1st version kW : 138.0  
Rated speed : 2400

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 1 688 901 017

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,6

Test lines : 1 680 750 015

Outside diameter  
x Wall thickness  
x Length mm : 6.00x1.50x600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values -----

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.25...4.35  
: (4.20...4.40)  
Rack travel in mm : 9.00...12.00  
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 9.00...12.00  
& maximum rack tra: 21.00  
Difference ° CS : 2.00...3.00

## BASIC SETTING

1st speed rpm : 1200

Rack travel in mm : 13.00...13.10

Del. quantity cm3/ : 12.7...12.9

100 s: (12.5...13.1)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 350.0

Rack travel in mm : 8.0...8.2

Del. quantity cm3/ : 2.3...2.7

100 s: (2.0...2.9)

Spread cm3 : 0.3

100 s: (0.5)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 300

travel mm : 0.90...1.30

2nd speed rpm : 500

travel mm : 2.60...3.00

3rd speed rpm : 800

travel mm : 4.40...4.80

4th speed rpm : 1000

travel mm : 5.50...5.90

5th speed rpm : 1360

travel mm : 8.40...8.50

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1440

Rack travel in mm : 8.00...0.00

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1200  
Aneroid pressure h: 600  
Del. quantity : 127.5...129.5  
1000 : (125.5...131.5)  
Spread cm3 : 5.00  
1000 : (9.00)

## RATED SPEED

1st version

Control lever  
position degrees: 42...50

Testing:

1st rack travel in: 12.00  
Speed rpm : 1260...1270  
2nd rack travel in: 4.00  
Speed rpm : 1385...1415  
4th rack travel in: 1500  
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever  
position degrees: 13...21

Testing:

Speed rpm : 100  
Minimum rack trave: 12.00  
Speed rpm : 350  
Rack travel in mm : 8.00...8.20  
Rack travel in mm : 2.00  
Speed rpm : 495...555

## CONSTANT REGULATION

Speed rpm : 390...460

## TORQUE CONTROL

Dimension a mm : 0.80  
Torque control curve - 1st version  
1st speed rpm : 1200  
Rack travel in m: 13.00...13.10  
2nd speed rpm : 750  
Rack travel in m: 13.80...13.90  
4th speed rpm : 975  
Rack travel in m: 13.40...13.50

Aneroid/Altitude  
Compensator Test

1st version

Setting  
Speed rpm : 500  
Rack travel in mm : 600  
Contr.-rod trav. mm: 13.80...13.90

## Measurement

Speed 1/min : 500

1st pressure hPa : -

Rack travel in m: 12.20...12.30

2nd pressure hPa : 267

Rack travel in m: 12.60...12.70

3rd pressure hPa : 335

Rack travel in m: 13.30...13.50

## START CUT-OUT

Speed 1/min : 290 (310)

## FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 600  
Speed rpm : 750  
Del. quantity cm3/ : 115.0...119.0  
1000 s: (113.0...121.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del. quantity cm3/ : 74.5...76.5  
1000 s: (72.5...78.5)

## BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 12.00

Speed rpm : 1260...1270

## STARTING FUEL DELIVERY

Speed rpm : 100  
Del. quantity cm3/ : 140.0...160.0  
1000 s: (-)  
Rack travel in mm : 20.00...21.00

## LOW IDLE

Speed rpm : 350  
Rack travel in mm : 8.00...8.20  
Del. quantity cm3/ : 23.0...27.0  
1000 s: (20.5...29.5)  
Spread cm3 : 3.50  
1000 s: (5.50)

Remarks:

:

Set shutoff stop 1.5...2.0 mm before  
shutoff.

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : FOR 7,8 E  
Edition : 08.01.88  
Replaces : 12.11.87  
Test oil : ISO-4113

Combination no. : 9 400 087 380

Injection pump  
Pump designation : PES6P110A72ORS3151  
EP type number : 9 400 087 047  
Governor  
Governor design. : RQV350...1200PA863-1  
Governor no. : 9 420 080 243

Customer-spec. information  
Customer : FORD (FNH)

Engine : 7.8 L TC

1st version kW : 157.0  
Rated speed : 2400

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 1 688 901 017

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,6

Test lines : 1 680 750 015

Outside diameter  
x Wall thickness  
x Length mm : 6.00x1.50x600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values -----

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.25...4.35  
                  : (4.20...4.40)  
Rack travel in mm : 9.00...12.00  
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 9.00...12.00  
& maximum rack tra: 21.00  
Difference ° CS : 2.00...3.00

## BASIC SETTING

1st speed rpm : 1200

Rack travel in mm : 13.30...13.40

Del. quantity cm3/ : 13.2...13.4

100 s: (13.0...13.6)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 350.0

Rack travel in mm : 8.0...8.2

Del. quantity cm3/ : 2.6...3.0

100 s: (2.3...3.2)

Spread cm3 : 0.3

100 s: (0.5)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 300

travel mm : 0.90...1.30

2nd speed rpm : 500

travel mm : 2.60...3.00

3rd speed rpm : 800

travel mm : 4.40...4.80

4th speed rpm : 1000

travel mm : 5.50...5.90

5th speed rpm : 1360

travel mm : 8.40...8.50

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1440

Rack travel in mm : 8.00...0.00

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1200  
Aneroid pressure h: 600  
Del.quantity : 132.0...134.0  
1000 : (130.0...136.0)  
Spread cm<sup>3</sup> : 5.00  
1000 : (9.00)

## RATED SPEED

1st version

Control lever  
position degrees: 43...51

Testing:

1st rack travel in: 12.30  
Speed rpm : 1260...1270  
2nd rack travel in: 4.00  
Speed rpm : 1390...1420  
4th rack travel in: 1520  
Speed rpm : 0.00...1.00

## LOW IDLE 1

Control lever  
position degrees: 13...21

Testing:

Speed rpm : 100  
Minimum rack travel: 12.00  
Speed rpm : 350  
Rack travel in mm : 8.00...8.20  
Rack travel in mm : 2.00  
Speed rpm : 495...555

## CONSTANT REGULATION

Speed rpm : 390...460

## TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1200  
Rack travel in m: 12.30...12.40  
2nd speed rpm : 750  
Rack travel in m: 14.00...14.10  
4th speed rpm : 975  
Rack travel in m: 13.80...13.90

Aneroid/Altitude  
Compensator Test

1st version

Setting  
Speed rpm : 500  
Rack travel in mm : 600  
Contr.-rod trav.mm: 14.00...14.10

## Measurement

F13

Speed 1/min : 500

1st pressure hPa : -

Rack travel in m: 11.90...12.00

2nd pressure hPa : 420

Rack travel in m: 12.50...12.60

3rd pressure hPa : 505

Rack travel in m: 13.40...13.60

## START CUT-OUT

Speed 1/min : 290 (310)

## FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 600

Speed rpm : 750

Del.quantity cm<sup>3</sup>/ : 116.0...120.0

1000 s: (114.0...122.0)

Aneroid pressure h: -

Speed rpm : 500

Del.quantity cm<sup>3</sup>/ : 70.0...72.0

1000 s: (68.0...74.0)

## BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 12.30

Speed rpm : 1260...1270

## STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm<sup>3</sup>/ : 150.0...170.0

1000 s: (-)

Rack travel in mm : 20.00...21.00

## LOW IDLE

Speed rpm : 350

Rack travel in mm : 8.00...8.20

Del.quantity cm<sup>3</sup>/ : 26.0...30.0

1000 s: (23.5...32.5)

Spread cm<sup>3</sup> : 3.50

1000 s: (5.50)

Remarks:

:

Set shutoff stop 1.5...2.0 mm before  
shutoff.

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : FOR 7,8 D 1  
Edition : 08.01.88  
Replaces : 12.11.87  
Test oil : ISO-4113

Combination no. : 9 400 087 381

Injection pump  
Pump designation : PES6P110A720RS3150  
EP type number : 9 400 087 046  
Governor  
Governor design. : RQV350...120CPA863-3  
Governor no. : 9 420 080 244

Customer-spec. information  
Customer : FORD (FNH)

Engine : 7.8 L TC

1st version kW : 160.0  
Rated speed : 2400

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 1 688 901 017

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,6

Test lines : 1 680 750 015

Outside diameter  
x Wall thickness  
x Length mm : 6.00x1.50x600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values -----

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.25...4.35  
: (4.20...4.40)  
Rack travel in mm : 9.00...12.00  
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 9.00...12.00  
& maximum rack tra: 21.00  
Difference ° CS : 2.00...3.00

## BASIC SETTING

1st speed rpm : 1200

Rack travel in mm : 12.90...13.00

Del. quantity cm3/ : 12.5...12.7

100 s: (12.3...12.9)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 350.0

Rack travel in mm : 8.0...8.2

Del. quantity cm3/ : 2.3...2.7

100 s: (2.1...2.9)

Spread cm3 : 0.3

100 s: (0.5)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 300

travel mm : 0.90...1.30

2nd speed rpm : 500

travel mm : 2.60...3.00

3rd speed rpm : 800

travel mm : 4.40...54.8

4th speed rpm : 1000

travel mm : 5.50...5.90

5th speed rpm : 1360

travel mm : 8.40...8.50

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1440

Rack travel in mm : 8.00...0.00

## FULL LOAD DELIV. AT FULL LOAD STOP

### 1st version

Speed rpm : 1200  
Aneroid pressure h: 600  
Del.quantity : 125.5...127.5  
1000 : (123.5...129.5)  
Spread cm3 : 5.00  
1000 : (9.00)

## RATED SPEED

### 1st version

Control lever  
position degrees: 42...50

### Testing:

1st rack travel in: 11.90  
Speed rpm : 1260...1270  
2nd rack travel in: 4.00  
Speed rpm : 1380...1410  
4th rack travel in: 1500  
Speed rpm : 0.00...1.00

## LOW IDLE 1

Control lever  
position degrees: 13...21

### Testing:

Speed rpm : 100  
Minimum rack trave: 12.00  
Speed rpm : 350  
Rack travel in mm : 8.00...8.20  
Rack travel in mm : 2.00  
Speed rpm : 495...555

## CONSTANT REGULATION

Speed rpm : 390...460

## TORQUE CONTROL

Dimension a mm : 1.10  
Torque control curve - 1st version  
1st speed rpm : 1200  
Rack travel in m: 12.90...13.00  
2nd speed rpm : 750  
Rack travel in m: 14.00...14.10  
4th speed rpm : 975  
Rack travel in m: 13.50...13.60

Aneroid/Altitude  
Compensator Test

### 1st version

Setting  
Speed rpm : 500  
Rack travel in mm : 600  
Contr.-rod trav.mm: 14.00...14.10

## Measurement

Speed 1/min : 500

1st pressure hPa : -

Rack travel in m: 12.90...13.00

2nd pressure hPa : 333

Rack travel in m: 13.20...13.30

3rd pressure hPa : 380

Rack travel in m: 13.70...13.90

## START CUT-OUT

Speed 1/min : 290 (310)

## FUEL DELIVERY CHARACTERISTICS

### 1st version

Aneroid pressure h: 600  
Speed rpm : 750  
Del.quantity cm3/ : 117.0...121.0  
1000 s: (115.0...123.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 84.0...86.0  
1000 s: (82.0...88.0)

## BREAKAWAY

### 1st version

1mm rack travel less than

full load rack tr: 11.90

Speed rpm : 1260...1270

## STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 150.0...170.0  
1000 s: (-)  
Rack travel in mm : 20.00...21.00

## LOW IDLE

Speed rpm : 350  
Rack travel in mm : 8.00...8.20  
Del.quantity cm3/ : 23.0...27.0  
1000 s: (21.0...29.0)  
Spread cm3 : 3.50  
1000 s: (5.50)

Remarks:

:

Set shutoff stop 1.5...2.0 mm before  
shutoff.



# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : FOR 7,8 E 1  
Edition : 08.01.88  
Replaces : 12.11.87  
Test oil : ISO-4113

Combination no. : 9 400 087 382

Injection pump  
Pump designation : PES6P110A72ORS3151  
EP type number : 9 400 087 047  
Governor  
Governor design. : RQV350...1200PA863-2  
Governor no. : 9 420 080 245

Customer-spec. information  
Customer : FORD (FNH)

Engine : 7.8 L TC

1st version kW : 160.0  
Rated speed : 2400

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 1 688 901 017

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,6

Test lines : 1 680 750 015

Outside diameter  
x Wall thickness  
x Length mm : 6.00X1.50X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values -----

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.25...4.35  
: (4.20...4.40)  
Rack travel in mm : 9.00...12.00  
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 9.00...12.00  
& maximum rack tra: 21.00  
Difference ° CS : 2.00...3.00

## BASIC SETTING

1st speed rpm : 1200

Rack travel in mm : 13.70...13.80

Del. quantity cm3/ : 13.6...13.8

100 s: (13.4...14.0)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 350.0

Rack travel in mm : 8.0...8.2

Del. quantity cm3/ : 2.4...2.8

100 s: (2.1...3.0)

Spread cm3 : 0.3

100 s: (0.5)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 300

travel mm : 0.90...1.30

2nd speed rpm : 500

travel mm : 2.60...3.00

3rd speed rpm : 800

travel mm : 4.40...4.80

4th speed rpm : 1000

travel mm : 5.50...5.90

5th speed rpm : 1360

travel mm : 8.40...8.50

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1440

Rack travel in mm : 8.00...0.00

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1200  
Aneroid pressure h : 600  
Del.quantity : 136.0...138.0  
1000 : (134.0...140.0)  
Spread cm<sup>3</sup> : 5.00  
1000 : (9.00)

## RATED SPEED

1st version

Control lever  
position degrees: 43...51

Testing:

1st rack travel in: 12.70  
Speed rpm : 1260...1270  
2nd rack travel in: 4.00  
Speed rpm : 1400...1430  
4th rack travel in: 1530  
Speed rpm : 0.00...1.00

## LOW IDLE 1

Control lever  
position degrees: 13...21

Testing:

Speed rpm : 100  
Minimum rack travel: 12.00  
Speed rpm : 350  
Rack travel in mm : 8.00...8.20  
Rack travel in mm : 2.00  
Speed rpm : 495...555

## CONSTANT REGULATION

Speed rpm : 390...460

## TORQUE CONTROL

Dimension a mm : 0.60  
Torque control curve - 1st version  
1st speed rpm : 1200  
Rack travel in m: 13.70...13.80  
2nd speed rpm : 750  
Rack travel in m: 14.30...14.40  
4th speed rpm : 975  
Rack travel in m: 14.10...14.20

Aneroid/Altitude  
Compensator Test

1st version

Setting

Speed rpm : 500  
Rack travel in mm : 600  
Contr.-rod trav.mm: 14.30...14.40

## Measurement

Speed 1/min : 500

1st pressure hPa : -

Rack travel in m: 12.40...12.50

2nd pressure hPa : 345

Rack travel in m: 12.90...13.00

3rd pressure hPa : 420

Rack travel in m: 13.60...13.80

## START CUT-OUT

Speed 1/min : 290 (310)

## FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 600

Speed rpm : 750

Del.quantity cm<sup>3</sup>/ : 119.0...123.0

1000 s: (117.0...125.0)

Aneroid pressure h: -

Speed rpm : 500

Del.quantity cm<sup>3</sup>/ : 76.5...78.5

1000 s: (74.5...80.5)

## BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 12.70

Speed rpm : 1260...1270

## STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm<sup>3</sup>/ : 140.0...160.0

1000 s: (-)

Rack travel in mm : 19.00...21.00

## LOW IDLE

Speed rpm : 350

Rack travel in mm : 8.00...8.20

Del.quantity cm<sup>3</sup>/ : 24.0...28.0

1000 s: (21.5...30.5)

Spread cm<sup>3</sup> : 3.50

1000 s: (5.50)

Remarks:

:

Set shutoff stop 1.5...2.0 mm before  
shutoff.

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : FOR 7,8 E 2  
 Edition : 08.01.88  
 Replaces : 12.11.87  
 Test oil : ISO-4113  
 Combination no. : 9 400 087 383  
 Injection pump  
 Pump designation : PES6P110A720RS3151  
 EP type number : 9 400 087 047  
 Governor  
 Governor design. : RQV350...1200PA863-4  
 Governor no. : 9 420 080 246

Customer-spec. information  
 Customer : FORD ( FNH )

Engine : 7.8 L TC

1st version kW : 179.0  
 Rated speed : 2400

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 1 688 901 017

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,6

Test lines : 1 680 750 015

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values -----

BEGINNING OF DELIVERY  
 Test pressure, bar: 25...27

Prestroke mm : 4.25...4.35  
 : (4.20...4.40)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 9.00...12.00  
 & maximum rack tra: 21.00  
 Difference ° CS : 2.00...3.00

## BASIC SETTING

1st speed rpm : 1200

Rack travel in mm : 14.50...14.60

Del. quantity cm3/ : 14.9...15.1

100 s: (14.7...15.3)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 350.0

Rack travel in mm : 8.0...8.2

Del. quantity cm3/ : 2.4...2.8

100 s: (2.1...3.0)

Spread cm3 : 0.3

100 s: (0.5)

(B) Setting of injection pump  
 with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 300  
 travel mm : 0.90...1.30

2nd speed rpm : 500  
 travel mm : 2.60...3.00

3rd speed rpm : 800  
 travel mm : 4.40...4.80

4th speed rpm : 1000  
 travel mm : 5.50...5.90

5th speed rpm : 1360  
 travel mm : 8.40...8.50

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1440

Rack travel in mm : 8.00...0.00

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1200  
Aneroid pressure h: 700  
Del.quantity : 149.5...151.5  
1000 : (147.5...153.5)  
Spread cm<sup>3</sup> : 5.00  
1000 : (9.00)

## RATED SPEED

1st version

Control lever  
position degrees: 44...52

Testing:

1st rack travel in: 13.50  
Speed rpm : 1260...1270  
2nd rack travel in: 4.00  
Speed rpm : 1410...1440  
4th rack travel in: 1520  
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever  
position degrees: 13...21

Testing:

Speed rpm : 100  
Minimum rack travel: 12.00  
Speed rpm : 350  
Rack travel in mm : 8.00...8.20  
Rack travel in mm : 2.00  
Speed rpm : 495...555

## CONSTANT REGULATION

Speed rpm : 390...460

## TORQUE CONTROL

Dimension a mm : 0.50  
Torque control curve - 1st version  
1st speed rpm : 1200  
Rack travel in m: 14.50...14.60  
2nd speed rpm : 750  
Rack travel in m: 15.00...15.10  
4th speed rpm : 975  
Rack travel in m: 14.70...14.80

Aneroid/Altitude  
Compensator Test

1st version

Setting  
Speed rpm : 500  
Rack travel in mm : 700  
Contr.-rod trav.mm: 15.00...15.10

## Measurement

Speed 1/min : 500

1st pressure hPa : -

Rack travel in m: 12.10...12.20

2nd pressure hPa : 430

Rack travel in m: 13.30...13.40

3rd pressure hPa : 532

Rack travel in m: 14.30...14.50

## START CUT-OUT

Speed 1/min : 290 (310)

## FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 700

Speed rpm : 750

Del.quantity cm<sup>3</sup>/ : 128.0...132.0  
1000 s: (126.0...134.0)

Aneroid pressure h: -

Speed rpm : 500

Del.quantity cm<sup>3</sup>/ : 72.0...74.0  
1000 s: (70.0...76.0)

## BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 13.50

Speed rpm : 1260...1270

## STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm<sup>3</sup>/ : 140.0...160.0  
1000 s: (-)

Rack travel in mm : 20.00...21.00

## LOW IDLE

Speed rpm : 350

Rack travel in mm : 8.00...8.20

Del.quantity cm<sup>3</sup>/ : 24.0...28.0  
1000 s: (21.5...30.5)

Spread cm<sup>3</sup> : 3.50  
1000 s: (5.50)

Remarks:

:

Set shutoff stop 1.5...2.0 mm before  
shutoff.

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : DEE 7,6 C 4  
 Edition : 14.01.88  
 Replaces : 6.11.87  
 Test oil : ISO-4113

Combination no. : 9 400 230 045

Injection pump  
 Pump designation : PES6A9SD41ORS2522-1  
 EP type number : 9 410 230 017  
 Governor  
 Governor design. : RSV425...1100A2C2161  
 L  
 Governor no. : 9 420 234 140

Customer-spec. information  
 Customer : JOHN DEERE

Engine : 6466T

1st version kW : 106.0  
 Rated speed : 2200

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 457 413 010

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values -----

## BEGINNING OF DELIVERY

Test pressure, bar : 27...29

Prestroke mm : 1.85...1.95  
 : (1.80...2.00)

Rack travel in mm : 10.50...10.50  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 9.00...9.10

Del. quantity cm<sup>3</sup>/ : 8.6...8.8

100 s : (8.4...9.0)

Spread cm<sup>3</sup> : 0.3

100 s : (0.6)

2nd speed rpm : 425.0

Rack travel in mm : 5.5...5.7

Del. quantity cm<sup>3</sup>/ : 1.8...2.2

100 s : (1.5...2.4)

Spread cm<sup>3</sup> : 0.3

100 s : (0.5)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : ?

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100

Aneroid pressure h : 500

Del. quantity : 86.5...88.5

1000 : (84.0...90.0)

Spread cm<sup>3</sup> : 3.50

1000 : (6.00)

## RATED SPEED

1st version

Control lever

position degrees: 46...54

Testing:

1st rack travel in: 8.00

Speed rpm : 1145...1155

2nd rack travel in: 4.00  
Speed rpm : 1185...1195  
4th rack travel in: 1300  
Speed rpm : 0.30...1.40

#### LOW IDLE 1

Control lever  
position degrees: 21...29  
Setting point w/out bumper spring  
Speed rpm : 425  
Rack travel in mm : 5.1

#### Testing:

Speed rpm : 100  
Minimum rack travel: 19.00  
Speed rpm : 425  
Rack travel in mm : 5.50...5.70  
Rack travel in mm : 2.00  
Speed rpm : 590...650

#### TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 1100  
Rack travel in m: 9.00...9.10  
2nd speed rpm : 650  
Rack travel in m: 10.40...10.60

Aneroid/Altitude  
Compensator Test

#### 1st version

Setting  
Speed rpm : 500  
Rack travel in mm : -  
Contr.-rod trav.mm: 10.20...10.40

#### Measurement

Speed 1/min : 500

1st pressure hPa : 100  
Rack travel in m: 10.30...10.40  
2nd pressure hPa : 149  
Rack travel in m: 10.40...10.60

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: 500  
Speed rpm : 650  
Del.quantity cm<sup>3</sup>/ : 102.5...105.5  
1000 s: (100.0...108.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm<sup>3</sup>/ : -  
1000 s: (87.0...95.0)

#### BREAKAWAY

F25

1st version  
1mm rack travel less than

full load rack tr: 8.00  
Speed rpm : 1145...1155

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 155.0...175.0  
1000 s: (150.0...180.0)  
Rack travel in mm : 19.00...21.00

#### HIGH IDLE

1st version  
Speed rpm : 1180  
Rack travel in mm : 5.30...5.50

#### LOW IDLE

Speed rpm : 425  
Rack travel in mm : 5.50...5.70  
Del.quantity cm<sup>3</sup>/ : 18.0...22.0  
1000 s: (15.5...24.5)  
Spread cm<sup>3</sup> : 3.50  
1000 s: (5.50)

#### Remarks:

: JOHN-DEERE - RE23750

Setting without torque-control spring  
retainer with 1 mm control-rod travel  
less. Raising of full-load delivery  
with torque-control spring retainer to  
9,0 mm control-rod travel.

Start-of-delivery mark 16° cam angle  
after start of delivery cyl. 1

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : DEE 7,6 J 1  
 Edition : 14.01.88  
 Replaces : 6.11.87  
 Test oil : ISO-4113  
 Combination no. : 9 400 230 046  
 Injection pump  
 Pump designation : PES6A95D410RS2561  
 EP type number : 9 410 230 006  
 Governor  
 Governor design. : RSV600...1100A2C2048  
 -1L  
 Governor no. : 9 420 234 157

Customer-spec. information  
 Customer : JOHN DEERE

Engine : 6466T

1st version kW : 110.0  
 Rated speed : 2200

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 413 385 007

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter  
 x Wall thickness : 6.35X2.00X600  
 x Length mm

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values -----

## BEGINNING OF DELIVERY

Test pressure, bar: 27...29

Prestroke mm : 1.85...1.95  
 : (1.80...2.00)

Rack travel in mm : 10.50...10.50  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 9.90...10.00

Del. quantity cm3/ : 9.1...9.3

100 s: (8.9...9.5)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 600.0

Rack travel in mm : 5.0...5.2

Del. quantity cm3/ : 1.2...1.6

100 s: (0.9...1.8)

Spread cm3 : 0.3

100 s: (0.5)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : ?

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100

Aneroid pressure h: -

Del. quantity : 91.0...93.0

1000 : (89.0...95.0)

Spread cm3 : 3.50

1000 : (6.00)

## RATED SPEED

1st version

Control lever

position degrees: 44...52

Testing:

1st rack travel in: 8.90

Speed rpm : 1145...1155

2nd rack travel in: 4.00  
Speed rpm : 1195...1225  
4th rack travel in: 1300  
Speed rpm : 0.30...1.40

#### LOW IDLE 1

Control lever  
position degrees: 24...32  
Setting point w/out bumper spring  
Speed rpm : 600  
Rack travel in mm : 4.6

#### Testing:

Speed rpm : 100  
Minimum rack travel: 19.00  
Speed rpm : 600  
Rack travel in mm : 5.00...5.20  
Rack travel in mm : 2.00  
Speed rpm : 710...770

#### TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 1100  
Rack travel in m: 9.90...10.00  
2nd speed rpm : 950  
Rack travel in m: 10.70...10.90

#### FUEL DELIVERY CHARACTERISTICS

##### 1st version

Speed rpm : 950  
Del.quantity cm<sup>3</sup>/ : 104.0...108.0  
1000 s: (101.5...110.5)

#### BREAKAWAY

##### 1st version

1mm rack travel less than

full load rack tr: 8.90  
Speed rpm : 1145...1155

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 155.0...175.0  
1000 s: (150.0...180.0)  
Rack travel in mm : 19.00...21.00

#### HIGH IDLE

##### 1st version

Speed rpm : 1200  
Rack travel in mm : 4.70...4.90

#### LOW IDLE

Speed rpm : 600  
Rack travel in mm : 5.00...5.20  
Del.quantity cm<sup>3</sup>/ : 12.0...16.0  
1000 s: (9.5...18.5)  
Spread cm<sup>3</sup> : 3.50  
1000 s: (5.50)

#### Remarks:

: JOHN DEERE - RE10472

Adjustment without torque-control  
spring retainer with 1 mm less  
Start-of-delivery mark = 15.5° after  
start of delivery cyl. 1. torque-control  
spring retainer.



# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : CUM 8,3 A 8  
Edition : 14.01.88  
Replaces : -  
Test oil : ISO-4113  
Combination no. : 9 400 230 116  
Injection pump  
Pump designation : PES6A1000320/3RS2691  
EP type number : 9 410 230 025  
Governor  
Governor design. : RSV400...1050AOC2190  
-25R  
Governor no. : 9 420 234 182

Customer-spec. information  
Customer : C.D.C

Engine : 6 CT 8.3  
1st version kW : 2100

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42  
Overflow valve : 1 417 413 047  
Inlet press., bar : 1.50  
Test nozzle holder  
assembly : 1 688 901 017  
Opening  
pressure, bar : 207...210  
Orifice plate  
diameter mm : 0,6  
Test lines : 9 681 271 029  
Outside diameter  
x Wall thickness  
x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values -----

## BEGINNING OF DELIVERY

Test pressure, bar: 27...29

Prestroke mm : 2.80...2.90  
: (2.75...2.95)  
Rack travel in mm : 10.50...10.50  
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1050  
-----  
Rack travel in mm : 12.40...12.50  
-----  
Del. quantity cm<sup>3</sup>/ : 12.2...12.4  
-----  
100 s: (12.0...12.6)  
-----  
Spread cm<sup>3</sup> : 0.3  
-----  
100 s: (0.6)  
-----  
2nd speed rpm : 400.0  
Rack travel in mm : 5.8...6.0  
Del. quantity cm<sup>3</sup>/ : 1.6...2.0  
100 s: (1.3...2.2)  
Spread cm<sup>3</sup> : 0.3  
100 s: (0.5)

## GUIDE SLEEVE POSITION

Control-lever position  
Degree: -3  
Speed rpm : 800  
Rack travel in mm : 0.30...0.70

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
Speed rpm : 1050  
Del. quantity : 122.5...124.5  
1000 : (120.5...126.5)  
Spread cm<sup>3</sup> : 3.50  
1000 : (6.00)

## RATED SPEED

1st version  
Control lever  
position degrees: 38...46

Testing:  
1st rack travel in: 11.40  
Speed rpm : 1090...1100  
2nd rack travel in: 4.00  
Speed rpm : 1135...1165

3rd rack travel in: 4.00  
Speed rpm : 1140...1170  
4th rack travel in: 1200  
Speed rpm : 0.30...1.40

#### LOW IDLE 1

Control lever  
position degrees: 19...27  
Setting point w/out bumper spring  
Speed rpm : 400  
Rack travel in mm : 5.4

#### Testing:

Speed rpm : 100  
Minimum rack trave: 19.00  
Speed rpm : 400  
Rack travel in mm : 5.80...6.00  
Rack travel in mm : 2.00  
Speed rpm : 440...500

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 11.40  
Speed rpm : 1090...1100

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 135.0...0.0  
1000 s: (130.0...0.0)  
Rack travel in mm : 19.00...21.00

#### LOW IDLE

Speed rpm : 400  
Rack travel in mm : 5.80...6.00  
Del.quantity cm3/ : 16.0...20.0  
1000 s: (13.5...22.5)  
Spread cm3 : 3.50  
1000 s: (5.50)

#### Remarks:

: C.D.C. - 391 1955

Adjust stop lever to 0.5...1.0 mm  
before stop.

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : DEE 7,6 C 6  
Edition : 14.01.88  
Replaces : -  
Test oil : ISO-4113

Combination no. : 9 400 230 117

Injection pump  
Pump designation : PES6A9SD41ORS2522-2  
EP type number : 9 410 230 032  
Governor  
Governor design. : RSV425...1100A2C2161  
-3L  
Governor no. : 9 420 234 183

Customer-spec. information  
Customer : JOHN DEERE

Engine : 6466TR20

1st version kW : 110.0  
Rated speed : 2200

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 457 413 010

Inlet press., bar : 1.50

Overflow  
quantity min. 1/h: 125...145

Test nozzle holder  
assembly : 1 688 901 017

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,6

Test lines : 1 680 750 014

Outside diameter  
x Wall thickness  
x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values -----

## BEGINNING OF DELIVERY

Test pressure, bar: 27...29

Prestroke mm : 1.85...1.95  
: (1.80...2.00)  
Rack travel in mm : 10.50...10.50  
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 8.80...8.90

Del.quantity cm3/ : 8.7...8.9

100 s: (8.5...9.1)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 425.0

Rack travel in mm : 4.8...5.0

Del.quantity cm3/ : 1.1...1.5

100 s: (0.8...1.7)

Spread cm3 : 0.3

100 s: (0.5)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : ?

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100

Aneroid pressure h: 600

Del.quantity : 87.5...89.5

1000 : (85.5...91.5)

Spread cm3 : 3.50

1000 : (6.00)

## RATED SPEED

1st version

Control lever  
position degrees: 46...54

Testing:

1st rack travel in: 7.80  
Speed rpm : 1145...1155  
2nd rack travel in: 4.00  
Speed rpm : 1190...1200  
4th rack travel in: 1300  
Speed rpm : 0.30...1.30

LOW IDLE 1

Control lever  
position degrees: 24...32  
Setting point w/out bumper spring  
Speed rpm : 425  
Rack travel in mm : 4.4

Testing:

Speed rpm : 100  
Minimum rack travel: 19.00  
Speed rpm : 425  
Rack travel in mm : 4.80...5.00  
Rack travel in mm : 2.00  
Speed rpm : 590...650

TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 1100  
Rack travel in m: 8.80...8.90  
2nd speed rpm : 700  
Rack travel in m: 10.00...10.20

Aneroid/Altitude  
Compensator Test

1st version

Setting  
Speed rpm : 500  
Rack travel in mm : 240  
Contr.-rod trav.mm: 9.60...9.70

Measurement

Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 9.00...9.20  
2nd pressure hPa : 200  
Rack travel in m: 9.10...9.50

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 600  
Speed rpm : 700  
Del.quantity cm<sup>3</sup>/ : 98.5...101.5  
1000 s: (96.0...104.0)  
Aneroid pressure h: -

G03

Speed rpm : 500  
Del.quantity cm<sup>3</sup>/ : -  
1000 s: (72.0...80.0)

BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 7.80  
Speed rpm : 1145...1155

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 160.0...180.0  
1000 s: (155.0...185.0)  
Rack travel in mm : 19.00...21.00

LOW IDLE

Speed rpm : 425  
Rack travel in mm : 4.80...5.00  
Del.quantity cm<sup>3</sup>/ : 11.0...15.0  
1000 s: (8.5...17.5)  
Spread cm<sup>3</sup> : 3.50  
1000 s: (5.50)

Remarks:

: JOHN DEERE - RE32013

Adjustment without torque-control  
spring retainer with 1 mm less  
Starting/full-load transition speed  
from holding magnet = 450 1/min. ntrol  
pring retainer.  
Start-of-delivery mark 16° cam angle  
after start of delivery cyl. 1

APPLICATION

Tractor (tractor engines)

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : DEE 7,6 C 7  
 Edition : 14.01.88  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 9 400 230 118  
 Injection pump  
 Pump designation : PES6A9SD410RS2522-2  
 EP type number : 9 410 230 032  
 Governor  
 Governor design. : RSV425...1100A2C2161  
 -4L  
 Governor no. : 9 42U 234 184

Customer-spec. information  
 Customer : JOHN DEERE

Engine : 6466TRW-06

1st version kW : 98.0  
 Rated speed : 2200

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 457 413 010

Inlet press., bar : 1.50

Overflow  
 quantity min. 1/h: 135...155

Test nozzle holder  
 assembly : 1 688 901 017

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,6

Test lines : 1 680 750 014

Outside diameter  
 x Wall thickness : 6.00X2.00X600  
 x Length mm

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values -----

## BEGINNING OF DELIVERY

Test pressure, bar: 27...29

Prestroke mm : 1.85...1.95  
 : (1.80...2.00)  
 Rack travel in mm : 10.50...10.50  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 8.20...8.30

Del.quantity cm<sup>3</sup>/ : 7.9...8.1

100 s: (7.7...8.3)

Spread cm<sup>3</sup> : 0.3

100 s: (0.6)

2nd speed rpm : 425.0

Rack travel in mm : 4.8...5.0

Del.quantity cm<sup>3</sup>/ : 1.1...1.5

100 s: (0.8...1.7)

Spread cm<sup>3</sup> : 0.3

100 s: (0.5)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : ?

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100

Aneroid pressure h: 600

Del.quantity : 79.0...81.0

1000 : (77.0...83.0)

Spread cm<sup>3</sup> : 3.50

1000 : (6.00)

## RATED SPEED

1st version

Control lever  
position degrees: 49...57

Testing:

1st rack travel in: 7.20  
Speed rpm : 1145...1155  
2nd rack travel in: 4.00  
Speed rpm : 1190...1200  
4th rack travel in: 1300  
Speed rpm : 0.30...1.30

LOW IDLE 1

Control lever  
position degrees: 27...35  
Setting point w/out bumper spring  
Speed rpm : 425  
Rack travel in mm : 4.4

Testing:

Speed rpm : 100  
Minimum rack travel: 19.00  
Speed rpm : 425  
Rack travel in mm : 4.80...5.00  
Rack travel in mm : 2.00  
Speed rpm : 590...650

TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 1100  
Rack travel in m: 8.20...8.30  
2nd speed rpm : 700  
Rack travel in m: 9.40...9.60

Aneroid/Altitude  
Compensator Test

1st version

Setting  
Speed rpm : 500  
Rack travel in mm : 213  
Contr.-rod trav.mm: 9.20...9.30

Measurement

Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 8.90...9.10  
2nd pressure hPa : 193  
Rack travel in m: 8.80...9.20

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 600  
Speed rpm : 700  
Del.quantity cm3/ : 86.0...89.0  
1000 s: (83.5...91.5)  
Aneroid pressure h: -

Speed rpm : 500  
Del.quantity cm3/ : -  
1000 s: (69.5...77.5)

BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 7.20  
Speed rpm : 1145...1155

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 160.0...180.0  
1000 s: (155.0...185.0)  
Rack travel in mm : 19.00...21.00

LOW IDLE

Speed rpm : 425  
Rack travel in mm : 4.80...5.00  
Del.quantity cm3/ : 11.0...15.0  
1000 s: (8.5...17.5)  
Spread cm3 : 3.50  
1000 s: (5.50)

Remarks:

: JOHN DEERE - RE31629

Adjustment without torque-control  
spring retainer with 1 mm less  
Starting/full-load transition speed  
from holding magnet = 450 1/min. ntrol  
pring retainer.  
Start-of-delivery mark 16° cam angle  
after start of delivery cyl. 1

APPLICATION

Tractor (tractor engines)

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : CUM 8,3 B 4  
 Edition : 14.01.88  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 9 400 230 119  
 Injection pump  
 Pump designation : PES6A100D320/3RS2691  
 -2  
 EP type number : 9 410 230 028  
 Governor  
 Governor design. : RQV350...1250AB1235R  
 Governor no. : 9 420 231 020

Customer-spec. information  
 Customer : C.D.C.

Engine : 6 CT-830

1st version kW : 157.0  
 Rated speed : 2500

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 1 688 901 017

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter : 0,6

Test lines : 9 681 271 029

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values -----

## BEGINNING OF DELIVERY

Test pressure, bar : 27...29

G06

Prestroke mm : 2.80...2.90  
 : (2.75...2.95)  
 Rack travel in mm : 10.50...10.50  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1250

Rack travel in mm : 11.40...11.50

Del. quantity cm3/ : 11.4...11.6

100 s : (11.2...11.8)

Spread cm3 : 0.3

100 s : (0.6)

2nd speed rpm : 350.0

Rack travel in mm : 5.1...5.3

Del. quantity cm3/ : 1.6...2.0

100 s : (1.3...2.2)

Spread cm3 : 0.3

100 s : (0.5)

(B) Setting of injection pump  
 with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 1400  
 travel mm : 8.50...8.50

2nd speed rpm : 1500  
 travel mm : 9.30...9.50

3rd speed rpm : 350  
 travel mm : 0.80...0.80

4th speed rpm : 450  
 travel mm : 1.80...2.30

5th speed rpm : 250  
 travel mm : 0.10...0.50

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1550

Rack travel in mm : 6.70...9.30

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1250

Aneroid pressure h: 500  
Del. quantity : 114.5...116.5  
1000 : (112.5...118.5)  
Spread cm3 : 3.50  
1000 : (6.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 42...48

Testing:  
1st rack travel in: 10.40  
Speed rpm : 1300...1310  
2nd rack travel in: 4.00  
Speed rpm : 1425...1455  
4th rack travel in: 1525  
Speed rpm : 0.00...1.00

LOW IDLE 1  
Control lever  
position degrees: 9...15

Testing:  
Speed rpm : 250  
Minimum rack travel: 7.80  
Speed rpm : 350  
Rack travel in mm : 5.10...5.30

CONSTANT REGULATION  
Speed rpm : 350...500

TORQUE CONTROL  
Dimension a mm : 0.50  
Torque control curve - 1st version  
1st speed rpm : 1250  
Rack travel in m: 11.40...11.50  
2nd speed rpm : 750  
Rack travel in m: 11.90...12.00  
3rd speed rpm : 1200  
Rack travel in m: 11.40...11.50  
4th speed rpm : 900  
Rack travel in m: 11.90...12.00

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 500  
Rack travel in mm : -  
Contr.-rod trav. mm: 8.90...9.10

Measurement  
Speed 1/min : 500

1st pressure hPa : 186  
Rack travel in m: 9.70...9.80

2nd pressure hPa : 346  
Rack travel in m: 10.90...11.30  
3rd pressure hPa : 500  
Rack travel in m: 11.90...12.00

#### START CUT-OUT

Speed 1/min : 270 (280)

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: 500  
Speed rpm : 750  
Del. quantity cm3/ : 118.0...122.0  
1000 s: (116.0...124.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del. quantity cm3/ : -  
1000 s: (59.5...67.5)

#### BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 10.40  
Speed rpm : 1300...1310

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del. quantity cm3/ : 160.0...180.0  
1000 s: (155.0...185.0)  
Rack travel in mm : 14.60...14.80

#### LOW IDLE

Speed rpm : 350  
Rack travel in mm : 5.10...5.30  
Del. quantity cm3/ : 16.0...20.0  
1000 s: (13.5...22.5)  
Spread cm3 : 3.50  
1000 s: (5.50)

Remarks:  
: C.D.C. - 3912636

Start-of delivery mark/lock = 7.5°  
angular displacement of the cam after  
start of delivery of cylinder 1.



# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : DEE 7,6 A 3  
 Edition : 15.01.88  
 Replaces : 10.85  
 Test oil : ISO-4113

Combination no. : 9 400 231 076

Injection pump  
 Pump designation : PES6P110A72ORS361  
 EP type number : 0 412 016 050  
 Governor  
 Governor design. : RSV600...1150P2/480  
 Governor no. : 9 420 234 050

Customer-spec. information  
 Customer : JOHN-DEERE

Engine : 6466 A

1st version kW : 170.0  
 Rated speed : 2300

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 457 413 010

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00x1.50x600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values -----

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.75...2.85  
 : (2.70...2.90)

Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

## BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 12.00...12.10

Del.quantity cm3/ : 16.2...16.4

100 s: (15.9...16.7)

Spread cm3 : 0.4

100 s: (0.7)

2nd speed rpm : 600.0

Rack travel in mm : 5.4...5.6

Del.quantity cm3/ : 2.2...2.8

100 s: (1.9...3.1)

Spread cm3 : 0.4

100 s: (0.7)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...1.00

Governor spring pre-tension

Click setting x : ?

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100

Del.quantity : 162.5...164.5

1000 : (159.5...167.5)

Spread cm3 : 4.00

1000 : (7.50)

## RATED SPEED

1st version

Control lever

position degrees: 42...50

Testing:

1st rack travel in: 11.00

Speed rpm : 1145...1155

2nd rack travel in: 4.00

Speed rpm : 1220...1250

4th rack travel in: 1380

Speed rpm : 0.30...1.70

LOW IDLE 1  
Control lever  
position degrees: 21...29  
Setting point w/out bumper spring  
Speed rpm : 600  
Rack travel in mm : 5.0  
Speed rpm : 600  
Rack travel in mm : 5.40...5.60  
Rack travel in mm : 2.00  
Speed rpm : 730...790

TORQUE CONTROL  
Torque control curve - 1st version  
1st speed rpm : 1100  
Rack travel in m: 11.95...12.05  
2nd speed rpm : 950  
Rack travel in m: 12.00...12.40  
3rd speed rpm : 850  
Rack travel in m: 12.25...12.35

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Speed rpm : 850  
Del.quantity cm<sup>3</sup>/ : 170.0...176.0  
1000 s: (168.0...178.0)

#### BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 11.00  
Speed rpm : 1145...1155

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 160.0...180.0  
1000 s: (-)  
Rack travel in mm : 20.00...21.00

#### HIGH IDLE

1st version  
Speed rpm : 1200  
Del.quantity cm<sup>3</sup>/ : 55.0...65.0  
1000 s: (53.0...67.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)

#### LOW IDLE

Speed rpm : 600  
Rack travel in mm : 5.40...5.60

Del.quantity cm<sup>3</sup>/ : 22.0...28.0  
1000 s: (19.0...31.0)  
Spread cm<sup>3</sup> : 4.50  
1000 s: (7.50)

Remarks:

:

Adjustment without torque-control  
spring retainer with 1 mm less  
Start-of-delivery mark = 13.25° after  
start of delivery cyl. 1. rque-control  
pring retainer.

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : DEE 7,6 G 8  
 Edition : 14.01.88  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 9 400 231 236  
 Injection pump  
 Pump designation : PES6P11QA72ORS3083-1  
 EP type number : 9 410 231 027  
 Governor  
 Governor design. : RSV475...1050P2A455-3  
 Governor no. : 9 420 234 172  
 Customer-spec. information  
 Customer : JOHN DEERE  
 Engine : 6466A  
 1st version kW : 151.0  
 Rated speed : 2100

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42  
 Overflow valve : 1 457 413 010  
 Inlet press., bar : 1.50  
 Test nozzle holder  
 assembly : 0 681 343 009  
 Opening  
 pressure, bar : 172...175  
 Test lines : 9 681 271 022  
 Outside diameter  
 x Wall thickness  
 x Length mm : 6.35X3.00X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values -----

## BEGINNING OF DELIVERY

Test pressure, bar: 27...29  
 Prestroke mm : 3.45...3.55  
 : (3.40...3.60)

Rack travel in mm : 10.50...10.50  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300  
 Tolerance + - ° : 0.50 (0.75)  
 Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1050  
 Rack travel in mm : 11.70...11.80  
 Del. quantity cm3/ : 13.6...13.9  
 100 s: (13.4...14.2)  
 Spread cm3 : 0.4  
 100 s: (0.7)  
 2nd speed rpm : 475.0  
 Rack travel in mm : 5.9...6.1  
 Del. quantity cm3/ : 1.4...1.9  
 100 s: (1.2...2.2)  
 Spread cm3 : 0.4  
 100 s: (0.7)

## GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -3  
 Speed rpm : 800  
 Rack travel in mm : 0.30...0.70

Governor spring pre-tension  
 Click setting x : ?

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 1050  
 Del. quantity : 136.5...139.5  
 1000 : (134.0...142.0)  
 Spread cm3 : 4.00  
 1000 : (7.50)

## RATED SPEED

1st version  
 Control lever  
 position degrees: 38...46

Testing:  
 1st rack travel in: 10.70  
 Speed rpm : 1090...1100  
 2nd rack travel in: 4.00

Speed rpm : 1145...1155  
3rd rack travel in: 4.00  
Speed rpm : 1150...1170  
4th rack travel in: 1250  
Speed rpm : 0.30...1.40

#### LOW IDLE 1

Control lever  
position degrees: 18...26  
Setting point w/out bumper spring  
Speed rpm : 475  
Rack travel in mm : 5.5

#### Testing:

Speed rpm : 100  
Minimum rack travel: 19.00  
Speed rpm : 475  
Rack travel in mm : 5.90...6.10  
Rack travel in mm : 2.00  
Speed rpm : 650...710

#### TORQUE CONTROL

Dimension a mm : 0.40  
Torque control curve - 1st version  
1st speed rpm : 1050  
Rack travel in mm : 11.70...11.80  
2nd speed rpm : 700  
Rack travel in mm : 12.10...12.20

#### FUEL DELIVERY CHARACTERISTICS

##### 1st version

Speed rpm : 700  
Del. quantity cm<sup>3</sup>/ : 139.5...143.5  
1000 s: (136.5...146.5)

#### BREAKAWAY

##### 1st version

1mm rack travel less than

full load rack tr: 10.70  
Speed rpm : 1090...1100

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del. quantity cm<sup>3</sup>/ : 150.0...170.0  
1000 s: (145.0...175.0)  
Rack travel in mm : 19.00...21.00

#### LOW IDLE

Speed rpm : 475  
Rack travel in mm : 5.90...6.10  
Del. quantity cm<sup>3</sup>/ : 14.5...19.5  
1000 s: (12.0...22.0)

Spread cm<sup>3</sup> : 4.50  
1000 s: (7.50)

#### Remarks:

: JOHN DEERE - RE30252

Adjustment without torque-control  
spring retainer with 1 mm less  
Start-of-delivery mark 12° cam angle  
after start of delivery cyl. 1. control  
spring retainer.

#### APPLICATION

Excavator

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB 2,0 N  
Edition : 15.1.88  
Replaces : 12.85  
Test oil : ISO-4113

Combination no. : 0 400 074 936

Injection pump  
Pump designation : PES4M55C320RS152-3  
EP type number : 0 410 054 967  
Governor  
Governor design. : RSF375/2300M55-4  
Governor no. : 0 420 021 046

Customer-spec. information  
Customer : DB

Engine : OM 601 (2,0 L)

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 469 990 351

Inlet press., bar : 1.00

Test nozzle holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter  
x Wall thickness  
x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values -----

## BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 2.00...2.10  
: (1.95...2.15)  
Rack travel in mm : 20.00...22.00  
Firing order : 1- 3- 4- 2

Phasing : 0-90-180-270  
Tolerance + - ° : 0.00 (1.00)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 11.10...11.20

Del.quantity cm3/ : 3.1...3.2

100 s: (3.0...3.3)

Spread cm3 : 0.25

100 s: (0.30)

2nd speed rpm : 375

Rack travel in mm : 5.4...5.6

Del.quantity cm3/ : 0.5...0.6

100 s: (0.45...0.90)

Spread cm3 : 0.10

100 s: (0.15)

## FULL LOAD DELIV. AT FULL LOAD STOP

### 1st version

Speed rpm : 1000

Del.quantity : 31.0...32.0

1000 : (30.0...33.0)

Spread cm3 : 2.50

1000 : (3.00)

## RATED SPEED

### 1st version

Control lever

position degrees: 50...0

3rd rack travel in: 7.8...8.2

Speed rpm : 0...2500

4th rack travel in: 2950

Speed rpm : 0.00...1.00

## SET IDLE CONTROL LEVER POSITION

Speed rpm : 1000

Rack travel in mm : 0.90...1.00

## LOW IDLE 1

Control lever

position degrees: 13...17

Setting point w/out bumper spring

Speed rpm : 375

Rack travel in mm : 5.5

Testing:

Speed rpm : 250  
Minimum rack travel: 11.5  
Speed rpm : 375  
Rack travel in mm : 5.40...5.60  
Rack travel in mm : 1.50  
Speed rpm : 630...730  
Speed rpm : 1000  
Maximum rack travel: 1.00

#### SET IDLE AUXILIARY SPRING

Speed rpm : 400  
Rack travel in mm : 4.40...4.60  
                    : (4.30...4.70)

#### TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1000  
Rack travel in mm : 11.10...11.20  
2nd speed rpm : 1800  
Rack travel in mm : 10.80...11.00  
3rd speed rpm : 2200  
Rack travel in mm : 10.30...10.50

#### FUEL DELIVERY CHARACTERISTICS

##### 1st version

Speed rpm : 1800  
Del. quantity cm<sup>3</sup>/ : 34.0...35.5  
                    1000 s: (33.0...36.5)  
Spread cm<sup>3</sup> : 2.50  
                    1000 s: (3.00)  
Speed rpm : 2200  
Del. quantity cm<sup>3</sup>/ : 33.0...35.0  
                    1000 s: (32.0...36.0)  
Spread cm<sup>3</sup> : 2.50  
                    1000 s: (3.00)

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del. quantity cm<sup>3</sup>/ : 55.0...0.0  
                    1000 s: (55.0...0.0)  
Rack travel in mm : 20.1...0.00

#### HIGH IDLE

##### 1st version

Speed rpm : 2500  
Rack travel in mm : 7.80...8.20  
Del. quantity cm<sup>3</sup>/ : 22.0...26.0  
                    1000 s: (21.0...27.0)  
Spread cm<sup>3</sup> : 2.50  
                    1000 s: (3.00)

#### LOW IDLE

Speed rpm : 375

Rack travel in mm : 5.40...5.60  
Del. quantity cm<sup>3</sup>/ : 5.0...6.0  
                    1000 s: (4.5...9.0)  
Spread cm<sup>3</sup> : 1.00  
                    1000 s: (1.50)

#### SETTING PNEUMATIC FAST IDLE (ELA)

Speed rpm : 425  
Rack travel in mm : (7.0...8.6)  
Del. quantity cm<sup>3</sup>/ : (13.0...21.0)  
                    1000 s: -  
Vacuum hPa : 0.40

Remarks:

#### CHECKING THE IDLE-SPEED AUXILIARY SPRING CUTOFF

-Control-lever position 49°, max.  
0.2 mm control-rod travel deduction  
allowable after switchover point (of  
starting cam) up to 1000 1/min.  
Control-lever position 46.5°,  
control-rod travel deduction must be  
greater than 0.2 mm after switchover  
point (of starting cam).

#### SETTING OF FBG

-Setting and locking of FBG according  
to start-of-delivery average of all  
cylinders 19.3...19.7° (19.2...19.8°).  
Cam angle according to cyl. 1.

Start-of-delivery spacing (difference)  
between max/min value 1° cam angle  
maximum.

#### TESTING PNEUMATIC SHUTOFF DEVICE

-Control lever at idle stop.  
With n = 375 1/min. and p<sub>u</sub> = 450 mbar,  
control rod must move quickly to  
control-rod travel = 0 mm

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : KHD 1 G 26  
 Edition : 07.03.88  
 Replaces : 28.11.86  
 Test oil : ISO-4113  
 Combination no. : 0 400 463 152  
 Injection pump  
 Pump designation : PES3A80D410/3RS1350  
 EP type number : 0 410 483 023  
 Governor  
 Governor design. : RSV325...1175ABC2163  
 -3L  
 Governor no. : 0 420 232 474

Customer-spec. information  
 Customer : KHD

Engine : F3L912

1st version kW : 34.0  
 Rated speed : 2350

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 000

Inlet press., bar : 1.00

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00x2.00x600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values -----

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 1.90...2.00  
 : (1.85...2.05)

Rack travel in mm : 9.00...12.00  
 Firing order : 1- 3- 2

Phasing : 0-120-240  
 Tolerance + - ° : 0.50 (0.75)  
 Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 800  
 Rack travel in mm : 10.30...10.40  
 Del. quantity cm<sup>3</sup>/ : 4.9...5.0  
 100 s: (4.8...5.2)  
 Spread cm<sup>3</sup> : 0.2  
 100 s: (0.3)

2nd speed rpm : 325.0  
 Rack travel in mm : 5.9...6.1  
 Del. quantity cm<sup>3</sup>/ : 1.0...1.6  
 100 s: (0.8...1.7)  
 Spread cm<sup>3</sup> : 0.2  
 100 s: (0.3)

## GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -3  
 Speed rpm : 800  
 Rack travel in mm : 0.30...0.70

Governor spring pre-tension  
 Click setting x : 6.00

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 800  
 Del. quantity : 49.5...50.5  
 1000 : (48.0...52.0)  
 Spread cm<sup>3</sup> : 2.50  
 1000 : (3.50)

## RATED SPEED

1st version  
 Control lever  
 position degrees: 56...64

Testing:  
 1st rack travel in: 8.20  
 Speed rpm : 1215...1225  
 2nd rack travel in: 4.00

Speed rpm : 1245...1275  
3rd rack travel in: 4.00  
Speed rpm : 1255...1285  
4th rack travel in: 1420  
Speed rpm : 0.30...1.40

#### LOW IDLE 1

Control lever  
position degrees: 20...28  
Setting point w/out bumper spring  
Speed rpm : 325  
Rack travel in mm : 5.5

#### Testing:

Speed rpm : 100  
Minimum rack trave: 19.50  
Speed rpm : 325  
Rack travel in mm : 5.90...6.10  
Rack travel in mm : 2.00  
Speed rpm : 480...540

#### TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 1175  
Rack travel in m: 9.20...9.30  
2nd speed rpm : 500  
Rack travel in m: 10.60...10.70  
4th speed rpm : 970  
Rack travel in m: 9.90...10.10

#### FUEL DELIVERY CHARACTERISTICS

##### 1st version

Speed rpm : 1175  
Del.quantity cm3/ : 47.5...51.5  
1000 s: (45.5...53.5)  
Speed rpm : 500  
Del.quantity cm3/ : 48.5...49.5  
1000 s: (46.5...51.5)  
Spread cm3 : 2.00  
1000 s: (-)

#### BREAKAWAY

##### 1st version

1mm rack travel less than

full load rack tr: 8.20  
Speed rpm : 1215...1225

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 115.0...125.0  
1000 s: (112.0...128.0)  
Rack travel in mm : 17.10...17.30

Remarks:

: TKS 2.40

#### APPLICATION

Tractor (tractor engines)



# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : KHD 1 G 29  
Edition : 12.02.88  
Replaces : 11.12.87  
Test oil : ISO-4113

Combination no. : 0 400 463 154

Injection pump  
Pump designation : PES3A80D410/3RS1350  
EP type number : 0 410 483 023  
Governor  
Governor design. : RSV325...1175A8C2223

Governor no. : 0 420 232 482

Customer-spec. information  
Customer : KHD

Engine : F3L912

1st version kW : 33.0  
Rated speed : 2350

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 000

Inlet press., bar : 1.00

Test nozzle holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter  
x Wall thickness  
x Length mm : 6.00x2.00x600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values -----

## BEGINNING OF DELIVERY

Test pressure, bar : 25...27

Prestroke mm : 1.90...2.00  
: (1.85...2.05)

Rack travel in mm : 9.00...12.00  
Firing order : 1- 3- 2

Phasing : 0-120-240

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 800

Rack travel in mm : 10.20...10.50

Del. quantity cm<sup>3</sup>/ : 4.8...4.9

100 s : (4.6...5.0)

Spread cm<sup>3</sup> : 0.2

100 s : (0.4)

2nd speed rpm : 325.0

Rack travel in mm : 6.2...6.4

Del. quantity cm<sup>3</sup>/ : 1.0...1.6

100 s : (0.8...1.7)

Spread cm<sup>3</sup> : 0.2

100 s : (0.3)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 5.50

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 800

Del. quantity : 48.0...49.0

1000 : (46.5...50.5)

Spread cm<sup>3</sup> : 2.50

1000 : (4.00)

## RATED SPEED

1st version

Control lever

position degrees: 52...60

Testing:

1st rack travel in: 8.10

Speed rpm : 1215...1225

2nd rack travel in: 4.00

Speed rpm : 1240...1270  
3rd rack travel in: 4.00  
Speed rpm : 1245...1275  
4th rack travel in: 1420  
Speed rpm : 0.30...1.40

#### LOW IDLE 1

Control lever  
position degrees: 15...23  
Setting point w/out bumper spring  
Speed rpm : 325  
Rack travel in mm : 5.8

#### Testing:

Speed rpm : 100  
Minimum rack trave: 19.50  
Speed rpm : 325  
Rack travel in mm : 6.20...6.40  
Rack travel in mm : 2.00  
Speed rpm : 465...525

#### TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 800  
Rack travel in m: 8.80...8.90  
2nd speed rpm : 500  
Rack travel in m: 10.60...10.70  
3rd speed rpm : 800  
Rack travel in m: 10.20...10.50  
4th speed rpm : 1175  
Rack travel in m: 9.10...9.40

#### FUEL DELIVERY CHARACTERISTICS

##### 1st version

Speed rpm : 1175  
Del.quantity cm3/ : 46.0...50.0  
1000 s: (44.0...52.0)  
Speed rpm : 800  
Del.quantity cm3/ : 33.0...34.0  
1000 s: (31.0...36.0)  
Spread cm3 : 2.50  
1000 s: (4.00)

#### BREAKAWAY

##### 1st version

1mm rack travel less than

full load rack tr: 8.10  
Speed rpm : 1215...1225

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 100.0...110.0  
1000 s: (97.0...113.0)

Rack travel in mm : 17.00...17.30

Remarks:

: RENAULT

#### APPLICATION

Tractor (tractor engines)

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : KHD 19,0 H  
 Edition : 19.02.88  
 Replaces : 18.12.87  
 Test oil : ISO-4113

Combination no. : 0 400 640 100

Injection pump  
 Pump designation : PE12A9SD610LS2453  
 EP type number : 0 410 690 998  
 Governor  
 Governor design. : RQV300...1150AB1047D  
 L  
 Governor no. : 0 420 214 242

Customer-spec. information  
 Customer : KHD

Engine : F12L413FW

1st version kW : 230.0  
 Rated speed : 2300

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 000

Inlet press., bar : 1.00

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00x2.00x600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values -----

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.00...2.10  
 : (1.95...2.15)

Rack travel in mm : 9.00...12.00  
 Firing order : 1- 4- 9- 8- 5- 2-  
 11- 10- 3- 6- 7- 12

Phasing : 0-15-60-75-120-135-  
 180-195-240-255-300-  
 315

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1150

Rack travel in mm : 9.20...9.30

Del. quantity cm<sup>3</sup>/ : 8.1...8.3  
 100 s: (7.9...8.5)

Spread cm<sup>3</sup> : 0.3  
 100 s: (0.6)

2nd speed rpm : 300.0  
 Rack travel in mm : 5.9...6.1  
 Del. quantity cm<sup>3</sup>/ : 0.9...1.5  
 100 s: (0.6...1.7)

Spread cm<sup>3</sup> : 0.3  
 100 s: (0.5)

(B) Setting of injection pump  
 with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 300  
 travel mm : 1.20...1.30

2nd speed rpm : 395  
 travel mm : 2.20...2.60

3rd speed rpm : 610  
 travel mm : 3.10...3.60

4th speed rpm : 1195  
 travel mm : 8.40...8.50

5th speed rpm : 1235  
 travel mm : 8.90...9.10

## GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -1

Speed rpm : 1180  
 Rack travel in mm : 15.20...17.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 1150

Del. quantity : 81.0...83.0  
1000 : (79.0...85.0)  
Spread cm3 : 3.50  
1000 : (6.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 60...68

Testing:  
1st rack travel in: 8.10  
Speed rpm : 1190...1200  
2nd rack travel in: 4.00  
Speed rpm : 1225...1255  
4th rack travel in: 1350  
Speed rpm : 0.00...1.00

#### LOW IDLE 1

Control lever  
position degrees: 17...25

Testing:  
Speed rpm : 100  
Minimum rack travel: 7.50  
Speed rpm : 300  
Rack travel in mm : 5.90...6.10

#### CONSTANT REGULATION

Speed rpm : 320...425

#### TORQUE CONTROL

Dimension a mm : 0.40  
Torque control curve - 1st version  
1st speed rpm : 1150  
Rack travel in m: 9.10...9.20  
2nd speed rpm : 500  
Rack travel in m: 9.50...9.60  
3rd speed rpm : 935  
Rack travel in m: 9.40...9.50  
4th speed rpm : 1045  
Rack travel in m: 9.10...9.30

#### START CUT-OUT

Speed 1/min : 220 (240)

#### FUEL DELIVERY CHARACTERISTICS

##### 1st version

Speed rpm : 650  
Del. quantity cm3/ : 93.5...96.5  
1000 s: (91.0...99.0)  
Speed rpm : 750  
Del. quantity cm3/ : 84.5...87.5  
1000 s: (82.0...90.0)

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 8.10  
Speed rpm : 1190...1200

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del. quantity cm3/ : 120.0...130.0  
1000 s: (117.0...133.0)  
Rack travel in mm : 15.40...15.80

Remarks:

:  
Check electrically unlatched starting  
fuel delivery (EES) with 24 volt.

On activation of the starting solenoid,  
the start position must be reached.

2. Set fuel delivery in fuel-delivery  
characteristics with stop above the  
governor housing.

#### APPLICATION

Below-ground operation

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : KHD 9.6 N 1  
 Edition : 05.02.88  
 Replaces : 7.12.87  
 Test oil : ISO-4113

Combination no. : 0 400 646 266

Injection pump  
 Pump designation : PE6A95D410LS2587  
 EP type number : 0 410 696 983  
 Governor  
 Governor design. : RQV300...1150AB1088L  
 Governor no. : 0 420 212 115

Customer-spec. information  
 Customer : KHD

Engine : F6L413 FW

1st version kW : 106.0  
 Rated speed : 2300

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 000

Inlet press., bar : 1.00

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values -----

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 1.50...1.60  
 : (1.45...1.65)  
 Rack travel in mm : 9.00...12.00

G20

Firing order : 1- 6- 5- 4- 3- 2

Phasing : 0-75-120-195-240-315

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1150

Rack travel in mm : 8.30...8.40

Del. quantity cm<sup>3</sup>/ : 7.2...7.4

100 s: (7.0...7.6)

Spread cm<sup>3</sup> : 0.3

100 s: (0.6)

2nd speed rpm : 300.0

Rack travel in mm : 5.9...6.1

Del. quantity cm<sup>3</sup>/ : 0.9...1.5

100 s: (0.6...1.7)

Spread cm<sup>3</sup> : 0.3

100 s: (0.5)

(B) Setting of injection pump  
 with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 300  
 travel mm : 1.20...1.30

2nd speed rpm : 400  
 travel mm : 2.30...2.70

3rd speed rpm : 600  
 travel mm : 3.00...3.50

4th speed rpm : 1195  
 travel mm : 8.40...8.50

5th speed rpm : 1235  
 travel mm : 8.90...9.10

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1190

Rack travel in mm : 15.20...17.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1150

Del. quantity : 72.0...74.0

1000 : (70.0...76.0)

Spread cm<sup>3</sup> : 3.50

1000 : (6.00)

## RATED SPEED

1st version

Control lever

position degrees: 61...69

Testing:

1st rack travel in: 7.30

Speed rpm : 1190...1200

2nd rack travel in: 4.00

Speed rpm : 1220...1250

4th rack travel in: 1350

Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever

position degrees: 12...20

Testing:

Speed rpm : 100

Minimum rack travel: 8.00

Speed rpm : 300

Rack travel in mm : 6.40...6.60

## CONSTANT REGULATION

Speed rpm : 320...420

## TORQUE CONTROL

Dimension a mm : 1.00

Torque control curve - 1st version

1st speed rpm : 1150

Rack travel in m: 8.30...8.40

2nd speed rpm : 500

Rack travel in m: 9.30...9.40

3rd speed rpm : 935

Rack travel in m: 9.00...9.20

4th speed rpm : 1045

Rack travel in m: 8.50...8.70

## START CUT-OUT

Speed 1/min : 220 (240)

## FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 800

Del. quantity cm<sup>3</sup>/ : 78.0...81.0

1000 s: (75.5...83.5)

Speed rpm : 650

Del. quantity cm<sup>3</sup>/ : 93.5...96.5

1000 s: (91.0...99.0)

## RACK STOP ADJUSTMENT

Speed rpm : 500

## BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 7.30

Speed rpm : 1190...1200

## STARTING FUEL DELIVERY

Speed rpm : 100

Del. quantity cm<sup>3</sup>/ : 120.0...130.0

1000 s: (117.0...133.0)

Rack travel in mm : 14.40...14.80

Remarks:

:

Check electrically unlatched starting fuel delivery (EES) with 24 volt.

2. Set fuel delivery in fuel-delivery characteristics with stop above the governor housing.

When accelerating from engine speed "0", no voltage in starting solenoid.

## APPLICATION

Below-ground operation

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : KHD 12,7 L  
 Edition : 05.02.88  
 Replaces : 9.83  
 Test oil : ISO-4113  
 Combination no. : 0 400 648 116  
 Injection pump  
 Pump designation : PE8A9SD41OLS2451  
 EP type number : 0 410 698 992  
 Governor  
 Governor design. : RQV300...1150AB1044D  
 L  
 Governor no. : 0 420 214 240

Customer-spec. information  
 Customer : KHD

Engine : F8L413FW

1st version kW : 153.0  
 Rated speed : 2300

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve  
 : 1 417 413 000

Inlet press., bar : 1.00

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values -----

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.00...2.10  
 : (1.95...2.15)

Rack travel in mm : 9.00...12.00  
 Firing order : 1- 8- 7- 2- 6- 5-  
 4- 3

Phasing : 0-45-90-135-180-225-  
 270-315

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1150

Rack travel in mm : 9.10...9.20

Del. quantity cm<sup>3</sup>/ : 7.8...8.0

100 s: (7.6...8.2)

Spread cm<sup>3</sup> : 0.3

100 s: (0.6)

2nd speed rpm : 300.0

Rack travel in mm : 5.9...6.1

Del. quantity cm<sup>3</sup>/ : 0.9...1.5

100 s: (0.6...1.7)

Spread cm<sup>3</sup> : 0.3

100 s: (0.5)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1150

Rack travel in mm : 15.20...17.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1150

Del. quantity : 78.5...80.5

1000 : (76.5...82.5)

Spread cm<sup>3</sup> : 3.50

1000 : (6.00)

## RATED SPEED

1st version

Control lever

position degrees: 60...68

Testing:

1st rack travel in: 8.10

Speed rpm : 1190...1200

2nd rack travel in: 4.00

Speed rpm : 1225...1255

4th rack travel in: 1350

Speed rpm : 0.00...1.00

#### LOW IDLE 1

Control lever

position degrees: 7...15

#### Testing:

Speed rpm : 100

Minimum rack travel: 7.50

Speed rpm : 300

Rack travel in mm : 5.90...6.10

Rack travel in mm : 2.00

Speed rpm : 540...600

#### CONSTANT REGULATION

Speed rpm : 320...400

#### TORQUE CONTROL

Dimension a mm : 0.40

Torque control curve - 1st version

1st speed rpm : 1150

Rack travel in m: 9.10...9.20

2nd speed rpm : 950

Rack travel in m: 9.10...9.40

3rd speed rpm : 850

Rack travel in m: 9.40...9.60

4th speed rpm : 500

Rack travel in m: 9.50...9.60

#### START CUT-OUT

Speed 1/min : 220 (240)

#### FUEL DELIVERY CHARACTERISTICS

##### 1st version

Speed rpm : 650

Del. quantity cm<sup>3</sup>/ : 93.5...96.5

1000 s: (91.0...99.0)

#### RACK STOP ADJUSTMENT

Speed rpm : 600

#### BREAKAWAY

##### 1st version

1mm rack travel less than

full load rack tr: 8.10

Speed rpm : 1190...1200

#### STARTING FUEL DELIVERY

Speed rpm : 100

Del. quantity cm<sup>3</sup>/ : 120.0...130.0

1000 s: (117.0...133.0)

Rack travel in mm : 15.40...15.80

Remarks:

:

Check electrically unlatched starting fuel delivery (EES) with 24 volt.

On activation of the starting solenoid, the start position must be reached.

2. Set fuel delivery in fuel-delivery characteristics with stop above the governor housing.

#### APPLICATION

Below-ground operation



# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : KHD 12,7 N1  
Edition : 07.03.88  
Replaces : 12.9.86  
Test oil : ISO-4113

Combination no. : 0 400 648 124

Injection pump  
Pump designation : PE8A95D410LS2588  
EP type number : 0 410 698 989  
Governor  
Governor design. : RQV300...1150AB1088  
Governor no. : 0 420 212 115

Customer-spec. information  
Customer : KHD

Engine : F8L413FW

1st version kW : 153.0  
Rated speed : 2300

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 000

Inlet press., bar : 1.00

Test nozzle holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter  
x Wall thickness  
x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values -----

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 1.50...1.60  
: (1.45...1.65)  
Rack travel in mm : 9.00...12.00

Firing order : 1- 8- 7- 2- 6- 5-  
4- 3

Phasing : 0-45-90-135-180-225-  
270-315

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1150

Rack travel in mm : 9.30...9.40

Del. quantity cm3/ : 7.1...7.3

100 s: (6.9...7.5)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 300.0

Rack travel in mm : 7.2...7.4

Del. quantity cm3/ : 1.4...2.0

100 s: (1.1...2.2)

Spread cm3 : 0.3

100 s: (0.5)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 300  
travel mm : 1.20...1.30

2nd speed rpm : 400  
travel mm : 2.20...2.60

3rd speed rpm : 600  
travel mm : 3.00...3.50

4th speed rpm : 1195  
travel mm : 8.50...8.50

5th speed rpm : 1245  
travel mm : 9.10...9.30

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1200

Rack travel in mm : 15.20...17.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1150

Del. quantity : 71.0...73.0

1000 : (69.0...75.0)

Spread cm<sup>3</sup> : 3.50  
1000 : (6.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 61...69

Testing:  
1st rack travel in: 8.30  
Speed rpm : 1190...1200  
2nd rack travel in: 4.00  
Speed rpm : 1230...1260  
4th rack travel in: 1350  
Speed rpm : 0.00...1.00

LOW IDLE 1  
Control lever  
position degrees: 8...16

Testing:  
Speed rpm : 100  
Minimum rack travel: 7.80  
Speed rpm : 300  
Rack travel in mm : 6.20...6.40

CONSTANT REGULATION  
Speed rpm : 320...430

TORQUE CONTROL  
Dimension a mm : 1.00  
Torque control curve - 1st version  
1st speed rpm : 1150  
Rack travel in m: 9.30...9.40  
2nd speed rpm : 500  
Rack travel in m: 10.30...10.40  
3rd speed rpm : 935  
Rack travel in m: 10.00...10.20  
4th speed rpm : 1045  
Rack travel in m: 9.50...9.70

#### START CUT-OUT

Speed 1/min : 220 (240)

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Speed rpm : 800  
Del. quantity cm<sup>3</sup>/ : 77.5...80.5  
1000 s: (75.0...83.0)  
Speed rpm : 650  
Del. quantity cm<sup>3</sup>/ : 93.5...96.5  
1000 s: (91.0...99.0)

#### RACK STOP ADJUSTMENT

Speed rpm : 500

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 8.30  
Speed rpm : 1190...1200

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del. quantity cm<sup>3</sup>/ : 120.0...130.0  
1000 s: (117.0...133.0)  
Rack travel in mm : 15.40...15.80

Remarks:

:  
Check electrically unlatched starting  
fuel delivery (EES) with 24 volt.

On activation of the starting solenoid,  
the start position must be reached.

2. Set fuel delivery in fuel-delivery  
characteristics with stop above the  
governor housing.

#### APPLICATION

Below-ground operation

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : KHD 15,8 C  
Edition : 05.02.88  
Replaces : 9.82  
Test oil : ISO-4113  
Combination no. : 0 400 649 208  
Injection pump  
Pump designation : PE10A95D610/4LS2452  
EP type number : 0 410 699 998  
Governor  
Governor design. : RQV300...1150AB1047D  
L  
Governor no. : 0 420 214 242

Customer-spec. information  
Customer : KHD

Engine : F10L413FW

1st version kW : 192.0  
Rated speed : 2300

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve  
: 1 417 413 000

Inlet press., bar : 1.00

Test nozzle holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter  
x Wall thickness  
x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values -----

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.00...2.10  
: (1.95...2.15)

Rack travel in mm : 9.00...12.00  
Firing order : 1-10- 9- 4- 3- 6-  
5- 8- 7- 2

Phasing : 0-27-72-99-144-171-  
216-243-288-315

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1150

Rack travel in mm : 9.10...9.20

Del. quantity cm<sup>3</sup>/ : 7.8...8.0

100 s: (7.6...8.2)

Spread cm<sup>3</sup> : 0.3

100 s: (0.6)

2nd speed rpm : 300.0

Rack travel in mm : 5.9...6.1

Del. quantity cm<sup>3</sup>/ : 0.9...1.5

100 s: (0.6...1.7)

Spread cm<sup>3</sup> : 0.3

100 s: (0.5)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1150

Rack travel in mm : 15.20...17.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1150

Del. quantity : 78.5...80.5

1000 : (76.5...82.5)

Spread cm<sup>3</sup> : 3.50

1000 : (6.00)

## RATED SPEED

1st version

Control lever

position degrees: 60...68

Testing:

1st rack travel in: 8.10

Speed rpm : 1190...1200

2nd rack travel in: 4.00

Speed rpm : 1225...1255

4th rack travel in: 1350

Speed rpm : 0.00...1.00

#### LOW IDLE 1

Control lever

position degrees: 7...15

#### Testing:

Speed rpm : 100

Minimum rack travel: 7.50

Speed rpm : 300

Rack travel in mm : 5.90...6.10

Rack travel in mm : 2.00

Speed rpm : 540...600

#### CONSTANT REGULATION

Speed rpm : 325...400

#### TORQUE CONTROL

Dimension a mm : 0.40

Torque control curve - 1st version

1st speed rpm : 1150

Rack travel in m: 9.10...9.20

2nd speed rpm : 950

Rack travel in m: 9.10...9.40

3rd speed rpm : 850

Rack travel in m: 9.40...9.60

4th speed rpm : 500

Rack travel in m: 9.50...9.60

#### START CUT-OUT

Speed 1/min : 220 (240)

#### FUEL DELIVERY CHARACTERISTICS

##### 1st version

Speed rpm : 650

Del. quantity cm<sup>3</sup>/ : 93.5...96.5

1000 s: (91.0...99.0)

#### BREAKAWAY

##### 1st version

1mm rack travel less than

full load rack tr: 8.10

Speed rpm : 1190...1200

#### STARTING FUEL DELIVERY

Speed rpm : 100

Del. quantity cm<sup>3</sup>/ : 120.0...130.0

1000 s: (117.0...133.0)

Rack travel in mm : 15.40...15.80

Remarks:

:

Check electrically unlatched starting fuel delivery (EES) with 24 volt.

On activation of the starting solenoid, the start position must be reached.

2. Set fuel delivery in fuel-delivery characteristics with stop above the governor housing.

#### APPLICATION

Below-ground operation

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : KHD 6,1 I  
Edition : 12.02.88  
Replaces : 9.85  
Test oil : ISO-4113  
  
Combination no. : 0 400 836 023  
  
Injection pump  
Pump designation : PES6A85D410/3RS2415  
EP type number : 0 410 886 915  
Governor  
Governor design. : RQV300...1250AB1131L  
Governor no. : 0 420 212 144

Customer-spec. information  
Customer : KHD

Engine : BF6L913T

1st version kW : 96.0  
Rated speed : 2500

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 000

Inlet press., bar : 1.00

Test nozzle holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter  
x Wall thickness  
x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values -----

## BEGINNING OF DELIVERY

Test pressure, bar : 25...27

Prestroke mm : 1.90...2.00  
: (1.85...2.05)

Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

## BASIC SETTING

1st speed rpm : 1250

Rack travel in mm : 12.00...12.10

Del. quantity cm<sup>3</sup>/ : 7.8...7.9

100 s: (7.6...8.1)

Spread cm<sup>3</sup> : 0.3

100 s: (0.4)

2nd speed rpm : 300.0

Rack travel in mm : 8.4...8.6

Del. quantity cm<sup>3</sup>/ : 0.9...1.5

100 s: (0.7...1.7)

Spread cm<sup>3</sup> : 0.2

100 s: (0.4)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 300

travel mm : 1.30...1.40

2nd speed rpm : 460

travel mm : 3.10...3.40

3rd speed rpm : 1290

travel mm : 8.10...8.20

4th speed rpm : 1415

travel mm : 9.20...9.40

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1275

Rack travel in mm : 15.20...17.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1250

Del. quantity : 78.0...79.0

1000 : (76.0...81.0)

Spread cm<sup>3</sup> : 3.00

1000 : (4.50)

## RATED SPEED

1st version

Control lever  
position degrees: 61...69

Testing:

1st rack travel in: 11.00  
Speed rpm : 1290...1300  
2nd rack travel in: 4.00  
Speed rpm : 1400...1430  
4th rack travel in: 1550  
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever  
position degrees: 69...77

Testing:

Speed rpm : 100  
Minimum rack travel: 10.00  
Speed rpm : 300  
Rack travel in mm : 8.40...8.60

CONSTANT REGULATION

Speed rpm : 440...550

TORQUE CONTROL

Dimension a mm : 0.80  
Torque control curve - 1st version  
1st speed rpm : 1250  
Rack travel in m: 12.00...12.10  
2nd speed rpm : 600  
Rack travel in m: 12.80...12.90  
3rd speed rpm : 790  
Rack travel in m: 12.60...12.80  
4th speed rpm : 910  
Rack travel in m: 12.10...12.30

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 600  
Del.quantity cm3/ : 71.5...73.5  
1000 s: (69.0...76.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack travel: 11.00  
Speed rpm : 1290...1300

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 105.0...115.0  
1000 s: (102.0...118.0)  
Rack travel in mm : 17.40...17.80

Remarks:

:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : KHD 6,1 Q  
Edition : 26.02.88  
Replaces : 11.12.87  
Test oil : ISO-4113

Combination no. : 0 400 836 035

Injection pump  
Pump designation : PES6A85D410/3RS2749  
EP type number : 0 410 886 896  
Governor  
Governor design. : RQV325...1250AB1131-1L  
Governor no. : 0 420 212 211

Customer-spec. information  
Customer : KHD

Engine : F6L913

1st version kW : 84.0  
Rated speed : 2500

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 000

Inlet press., bar : 1.00

Test nozzle holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter  
x Wall thickness  
x Length mm : 6.00x2.00x600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values -----

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.50...2.60  
: (2.45...2.65)

Rack travel in mm : 9.00...12.00  
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

## BASIC SETTING

1st speed rpm : 1250  
Rack travel in mm : 10.30...10.40  
Del. quantity cm<sup>3</sup>/ : 6.6...6.7  
100 s: (6.4...6.9)

Spread cm<sup>3</sup> : 0.3  
100 s: (0.5)

2nd speed rpm : 325.0  
Rack travel in mm : 7.0...7.2  
Del. quantity cm<sup>3</sup>/ : 1.0...1.6  
100 s: (0.8...1.8)

Spread cm<sup>3</sup> : 0.2  
100 s: (0.4)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 325  
travel mm : 1.60...1.70  
2nd speed rpm : 460  
travel mm : 3.00...3.30  
3rd speed rpm : 525  
travel mm : 3.50...4.00  
4th speed rpm : 1310  
travel mm : 8.20...8.30  
5th speed rpm : 1390  
travel mm : 9.00...9.20

## GUIDE SLEEVE POSITION

Control-lever position  
Degree: -1  
Speed rpm : 1310  
Rack travel in mm : 15.20...17.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
Speed rpm : 1250  
Del. quantity : 66.0...67.0  
1000 : (64.0...69.0)

Spread cm<sup>3</sup> : 3.00  
1000 : (5.00)

## RATED SPEED

1st version

Control lever

position degrees: 63...71

Testing:

1st rack travel in: 9.30

Speed rpm : 1290...1300

2nd rack travel in: 4.00

Speed rpm : 1375...1405

4th rack travel in: 1500

Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever

position degrees: 13...21

Testing:

Speed rpm : 100

Minimum rack travel: 8.50

Speed rpm : 325

Rack travel in mm : 7.00...7.20

CONSTANT REGULATION

Speed rpm : 440...550

TORQUE CONTROL

Dimension a mm : 0.50

Torque control curve - 1st version

1st speed rpm : 1250

Rack travel in m: 10.30...10.40

2nd speed rpm : 500

Rack travel in m: 10.80...10.90

3rd speed rpm : 1000

Rack travel in m: 10.60...10.80

4th speed rpm : 1135

Rack travel in m: 10.40...10.60

START CUT-OUT

Speed 1/min : 245 (265)

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 800

Del. quantity cm<sup>3</sup>/ : 55.0...57.0

1000 s: (52.5...59.5)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 9.30

Speed rpm : 1290...1300

H03

## STARTING FUEL DELIVERY

Speed rpm : 100

Del. quantity cm<sup>3</sup>/ : 105.0...115.0

1000 s: (102.0...118.0)

Rack travel in mm : 16.30...16.70

Remarks:

:



# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MAN 11,1 K1  
Edition : 22.01.88  
Replaces : 12.9.86  
Test oil : ISO-4113

Combination no. : 0 400 846 379

Injection pump  
Pump designation : PES6A95D41QLS2489  
EP type number : 0 410 896 949  
Governor  
Governor design. : RQ250/1050AB894DL  
Governor no. : 0 420 202 256

Customer-spec. information  
Customer : MAN

Engine : D2566MUH

1st version kW : 141.0  
Rated speed : 2100

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 000

Inlet press., bar : 1.00

Test nozzle holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 172...175

Test lines : 1 680 750 003

Outside diameter  
x Wall thickness  
x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values -----

## BEGINNING OF DELIVERY

Test pressure, bar : 25...27

Prestroke mm : 1.50...1.60  
: (1.45...1.65)

Rack travel in mm : 9.00...12.00

H04

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1050

Rack travel in mm : 10.00...10.10

Del. quantity cm<sup>3</sup>/ : 10.1...10.3

100 s: (9.9...10.5)

Spread cm<sup>3</sup> : 0.3

100 s: (0.6)

2nd speed rpm : 250.0

Rack travel in mm : 5.9...6.1

Del. quantity cm<sup>3</sup>/ : 1.2...1.8

100 s: (0.9...2.0)

Spread cm<sup>3</sup> : 0.3

100 s: (0.5)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 600

Rack travel in mm : 15.40...16.40

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1050

Del. quantity : 101.5...103.5

1000 : (99.5...105.5)

Spread cm<sup>3</sup> : 3.50

1000 : (6.00)

## RATED SPEED

1st version

Setting point:

Speed rpm : 600

Rack travel in mm : 15.9

Testing:

1st rack travel in: 9.00

Speed rpm : 1095...1110

2nd rack travel in: 4.00

Speed rpm : 1140...1170

# LOW IDLE 1

Setting point w/out bumper spring

Speed rpm : 250

Rack travel in mm : 6.0

## Testing:

Speed rpm : 100

Minimum rack trave: 7.50

Speed rpm : 250

Rack travel in mm : 5.90...6.10

Rack travel in mm : 2.00

Speed rpm : 360...400

## TORQUE CONTROL

Dimension a mm : 0.35

Torque control curve - 1st version

1st speed rpm : 1050

Rack travel in m: 10.00...10.10

2nd speed rpm : 500

Rack travel in m: 10.50...10.60

4th speed rpm : 960

Rack travel in m: 10.10...10.30

## FUEL DELIVERY CHARACTERISTICS

### 1st version

Speed rpm : 500

Del.quantity cm3/ : 99.5...103.5

1000 s: (97.5...105.5)

Speed rpm : 700

Del.quantity cm3/ : 99.5...103.5

1000 s: (97.5...105.5)

## BREAKAWAY

### 1st version

1mm rack travel less than

full load rack tr: 9.00

Speed rpm : 1095...1110

## INTERMEDIATE RATED SPEED

Rack travel in mm : 4.00

## STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/ : 116.5...126.5

1000 s: (113.5...129.5)

Rack travel in mm : 12.50...14.50

Remarks:

: MAN-NR. 1-7752

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MAN 11.1 X  
Edition : 10.3.88  
Replaces : -  
Test oil : ISO-4113  
  
Combination no. : 0 400 846 441  
  
Injection pump  
Pump designation : PES6A9SD410LS2607  
EP type number : 0 410 896 936  
Governor  
Governor design. : RQV750AB95SL  
Governor no. : 0 420 212 073

Customer-spec. information  
Customer : MAN

Engine : D2566 ME

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve  
: 1 417 413 000

Inlet press., bar : 1.00

Test nozzle holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter  
x Wall thickness  
x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values -----

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 1.50...1.60  
: (1.45...1.65)  
Rack travel in mm : 9.00...12.00  
Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300  
Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

## BASIC SETTING

1st speed rpm : 700  
-----  
Rack travel in mm : 12.00...12.10  
-----  
Del. quantity cm3/ : 11.8...12.0  
-----  
100 s: (11.6...12.2)  
-----  
Spread cm3 : 0.3  
-----  
100 s: (0.6)  
-----

2nd speed rpm : 250  
Rack travel in mm : ?  
Del. quantity cm3/ : 0.9...1.5  
100 s: (-)  
Spread cm3 : 0.3  
100 s: (0.5)

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
Speed rpm : 700  
Del. quantity : 118.0...120.0  
1000 : (116.0...122.0)  
Spread cm3 : 3.0  
1000 : (6.0)

## RATED SPEED

1st version  
Control lever  
position degrees: 25...33

Testing:  
1st rack travel in: 11.00  
Speed rpm : 750...755  
2nd rack travel in: 4.00  
Speed rpm : 770...780

Remarks:

## APPLICATION

Generator set

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MAN 11,1P21  
Edition : 10.3.88  
Replaces : 22.5.87  
Test oil : ISO-4113

Combination no. : 0 400 846 502

Injection pump  
Pump designation : PES6A9SD41OLS2S42  
EP type number : 0 410 896 936  
Governor  
Governor design. : RQ250/1100AB1137-2L  
Governor no. : 0 420 200 084

Customer-spec. information  
Customer : MAN

Engine : D2566 M/MF

1st version kW : 177.0  
Rated speed : 2200  
2nd version kW : 168.0\*  
Rated speed : 2200

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve  
: 1 417 413 000

Inlet press., bar : 1.00

Test nozzle holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter  
x Wall thickness  
x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values -----

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 1.50...1.60  
: (1.45...1.65)  
Rack travel in mm : 9.00...12.00  
Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300  
Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

## BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 12.00...12.10

Del. quantity cm3/ : 12.4...12.6

100 s: (12.2...12.8)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 250

Rack travel in mm : 6.5...6.7

Del. quantity cm3/ : 0.8...1.4

100 s: (0.5...1.6)

Spread cm3 : 0.3

100 s: (0.5)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 600

Rack travel in mm : 15.60...16.40

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100

Del. quantity : 124.5...126.5

1000 : (122.5...128.5)

Spread cm3 : 3.00

1000 : (6.00)

2nd version

Speed rpm : 1100

Del. quantity cm3/ : 118.0...120.0 \*

1000 s: (116.0...122.0)

Spread cm3 : 3.00

1000 s: (6.00)

## RATED SPEED

1st version

Setting point:

Speed rpm : 600

Rack travel in mm : 16.0

Testing:

1st rack travel in: 11.00

Speed rpm : 1145...1160

2nd rack travel in: 4.00

Speed rpm : 1195...1225

2nd version

Setting point:

Speed rpm : 600 \*

Rack travel in mm : 16.0

Testing:

1st rack travel in: 11.00

Speed rpm : 1145...1160

2nd rack travel in: 4.00

Speed rpm : 1195...1225

LOW IDLE 1

Setting point w/out bumper spring

Speed rpm : 250

Rack travel in mm : 6.00

Testing:

Speed rpm : 100

Minimum rack travel: 7.50

Speed rpm : 250

Rack travel in mm : 5.90...6.10

Rack travel in mm : 2.00

Speed rpm : 360...400

TORQUE CONTROL

Dimension a mm : -

Torque control curve - 1st version

1st speed rpm : 1100

Rack travel in m: 12.00...12.10

2nd speed rpm : 500

Rack travel in m: 12.00...12.20

Torque control curve - 2nd version

1st speed rpm : - \*

Rack travel in m: -

2nd speed rpm : -

Rack travel in m: -

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 500

Del.quantity cm<sup>3</sup>/ : 107.5...113.5

1000 s: (105.5...115.5)

Speed rpm : 750

Del.quantity cm<sup>3</sup>/ : 110.5...113.5

1000 s: (108.0...116.0)

2nd version

Speed rpm : 500

H08

Del.quantity cm<sup>3</sup>/ : 102.0...108.0 \*

1000 s: (100.0...110.0)

Speed rpm : 750

Del.quantity cm<sup>3</sup>/ : 106.0...109.0

1000 s: (104.0...111.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.00

Speed rpm : 1145...1160

2nd version

1mm rack travel less than

full load rack tr: 11.00

Speed rpm : 1145...1160 \*

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm<sup>3</sup>/ : 122.0...132.0

1000 s: (119.0...135.0)

Rack travel in mm : 15.50...15.90

Remarks:

: MAN-NR. 2-7434

\* Version 2

\*Tropics version

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MAN 11,4 b2  
 Edition : 26.02.88  
 Replaces : 22.1.88  
 Test oil : ISO-4113

Combination no. : 0 400 846 507

Injection pump  
 Pump designation : PES6A95D41OLS2639  
 EP type number : 0 410 896 925  
 Governor  
 Governor design. : RQ250...1100AB1137-6L  
 Governor no. : 0 420 200 088

Customer-spec. information  
 Customer : MAN

Engine : D2566MUH

1st version kW : 147.0  
 Rated speed : 2200

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 000

Inlet press., bar : 1.00

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values -----

## BEGINNING OF DELIVERY

Test pressure, bar : 25...27

Prestroke mm : 1.70...1.80  
 : (1.65...1.85)

Rack travel in mm : 9.00...12.00  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

## BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 13.40...13.50

Del. quantity cm<sup>3</sup>/ : 12.6...12.8

100 s : (12.4...13.0)

Spread cm<sup>3</sup> : 0.3

100 s : (0.6)

2nd speed rpm : 250.0

Rack travel in mm : 7.0...7.2

Del. quantity cm<sup>3</sup>/ : 0.9...1.5

100 s : (0.6...1.7)

Spread cm<sup>3</sup> : 0.3

100 s : (0.5)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 600

Rack travel in mm : 15.60...16.40

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700

Del. quantity : 126.0...128.0

1000 : (124.0...130.0)

Spread cm<sup>3</sup> : 3.00

1000 : (6.00)

## RATED SPEED

1st version

Setting point:

Speed rpm : 600

Rack travel in mm : 16.0

Testing:

1st rack travel in: 11.50

Speed rpm : 1145...1160

2nd rack travel in: 4.00

Speed rpm : 1245...1275

#### LOW IDLE 1

Setting point w/out bumper spring

Speed rpm : 250

Rack travel in mm : 6.0

#### Testing:

Speed rpm : 100

Minimum rack trave: 7.50

Speed rpm : 250

Rack travel in mm : 5.90...6.10

Rack travel in mm : 2.00

Speed rpm : 385...425

Speed rpm : 450

Maximum rack trave: 1.00

#### TORQUE CONTROL

Dimension a mm : 0.40

Torque control curve - 1st version

1st speed rpm : 1100

Rack travel in m: 12.50...12.60

2nd speed rpm : 600

Rack travel in m: 13.40...13.50

3rd speed rpm : 860

Rack travel in m: 13.10...13.30

4th speed rpm : 910

Rack travel in m: 12.60...12.90

#### FUEL DELIVERY CHARACTERISTICS

##### 1st version

Speed rpm : 1100

Del.quantity cm3/ : 127.0...130.0

1000 s: (124.5...132.5)

Speed rpm : 500

Del.quantity cm3/ : 126.5...130.5

1000 s: (124.5...132.5)

#### BREAKAWAY

##### 1st version

1mm rack travel less than

full load rack tr: 11.50

Speed rpm : 1145...1160

#### STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/ : 95.0...105.0

1000 s: (92.0...108.0)

Rack travel in mm : 13.60...14.00

Remarks:

:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : LIE 8,4 b  
 Edition : 26.02.88  
 Replaces : 12.9.86  
 Test oil : ISO-4113

Combination no. : 0 400 846 536

Injection pump  
 Pump designation : PES6A100D41ORS2687  
 EP type number : 0 410 806 001  
 Governor  
 Governor design. : RQV400...1000AB1203L  
 Governor no. : 0 420 212 177

Customer-spec. information  
 Customer : LIEBHERR

Engine : D906T

1st version kW : 132.0  
 Rated speed : 2000

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 40...45

Overflow valve : 1 417 413 000

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 008

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values -----

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.70...2.80  
 : (2.65...2.85)  
 Rack travel in mm : 9.00...12.00

H11

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

## BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 9.00...12.00  
 & maximum rack tra: 21.00  
 Difference ° CS : 4.00...5.00

## BASIC SETTING

1st speed rpm : 1000  
 -----  
 Rack travel in mm : 11.50...11.60  
 -----  
 Del. quantity cm<sup>3</sup>/ : 10.8...11.0  
 -----  
 100 s: (10.6...11.2)  
 -----  
 Spread cm<sup>3</sup> : 0.3  
 -----  
 100 s: (0.6)  
 -----

2nd speed rpm : 400.0  
 Rack travel in mm : 6.9...7.1  
 Del. quantity cm<sup>3</sup>/ : 1.0...1.6  
 100 s: (0.7...1.8)  
 Spread cm<sup>3</sup> : 0.3  
 100 s: (0.5)

(B) Setting of injection pump  
 with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 375  
 travel mm : 1.00...1.10  
 2nd speed rpm : 600  
 travel mm : 3.70...4.00  
 3rd speed rpm : 1000  
 travel mm : 7.50...7.60  
 4th speed rpm : 1150  
 travel mm : 9.50...10.20

## GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -1  
 Speed rpm : 1070  
 Rack travel in mm : 15.20...17.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 1000  
 Aneroid pressure h: 700



Del.quantity : 108.0...110.0  
1000 : (106.0...112.0)  
Spread cm<sup>3</sup> : 3.50  
1000 : (6.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 58...66

Testing:  
1st rack travel in: 10.50  
Speed rpm : 1040...1050  
2nd rack travel in: 4.00  
Speed rpm : 1105...1135  
4th rack travel in: 1250  
Speed rpm : 0.00...1.00

#### LOW IDLE 1

Control lever  
position degrees: 10...18

Testing:  
Speed rpm : 100  
Minimum rack travel: 8.40  
Speed rpm : 400  
Rack travel in mm : 6.90...7.10

#### CONSTANT REGULATION

Speed rpm : 420...530

#### TORQUE CONTROL

Dimension a mm : 1.30  
Torque control curve - 1st version  
1st speed rpm : 1000  
Rack travel in m: 11.50...11.60  
2nd speed rpm : 500  
Rack travel in m: 12.80...12.90  
4th speed rpm : 900  
Rack travel in m: 11.80...12.00

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 500  
Rack travel in mm : 700  
Contr.-rod trav.mm: 12.80...12.90

#### Measurement

Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 12.50...12.60  
2nd pressure hPa : 420  
Rack travel in m: 12.60...12.70

#### START CUT-OUT

Speed 1/min : 320 (340)

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: 700  
Speed rpm : 700  
Del.quantity cm<sup>3</sup>/ : 118.5...121.5  
1000 s: (116.0...124.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm<sup>3</sup>/ : 103.0...107.0  
1000 s: (101.0...109.0)

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 10.50  
Speed rpm : 1040...1050

#### INTERMEDIATE RATED SPEED

Rack travel in mm : 4.00

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 113.0...123.0  
1000 s: (110.0...126.0)  
Rack travel in mm : 19.50...21.00

#### LOW IDLE

Speed rpm : 400  
Rack travel in mm : 6.90...7.10  
Del.quantity cm<sup>3</sup>/ : 10.0...16.0  
1000 s: (7.5...18.5)  
Spread cm<sup>3</sup> : 3.50  
1000 s: (5.50)

Remarks:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : KHD 1 g 1  
Edition : 05.02.88  
Replaces : 10.85  
Test oil : ISO-4113  
  
Combination no. : 0 400 863 007  
  
Injection pump  
Pump designation : PES3A85D410/3RS2642  
EP type number : 0 410 883 989  
Governor  
Governor design. : RSV325...1150A8C2102  
-1L  
Governor no. : 0 420 232 365

Customer-spec. information  
Customer : KHD

Engine : F3L913

1st version kW : 42.0  
Rated speed : 2300

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve  
: 1 417 413 000

Inlet press., bar : 1.00

Test nozzle holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter  
x Wall thickness  
x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values -----

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.50...2.60  
: (2.45...2.65)

Rack travel in mm : 9.00...12.00  
Firing order : 1- 3- 2

Phasing : 0-120-240  
Tolerance + - ° : 0.50 (0.75)

## BASIC SETTING

1st speed rpm : 700  
Rack travel in mm : 11.80...11.90  
Del. quantity cm3/ : 6.6...6.7  
100 s: (6.4...6.9)  
Spread cm3 : 0.3  
100 s: (0.4)

2nd speed rpm : 325.0  
Rack travel in mm : 8.9...9.1  
Del. quantity cm3/ : 1.6...2.2  
100 s: (1.4...2.4)  
Spread cm3 : 0.2  
100 s: (0.4)

## GUIDE SLEEVE POSITION

Control-lever position  
Degree: -3  
Speed rpm : 800  
Rack travel in mm : 0.30...0.70

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
Speed rpm : 700  
Del. quantity : 66.0...67.0  
1000 : (64.0...69.0)  
Spread cm3 : 3.00  
1000 : (4.50)

## RATED SPEED

1st version  
Control lever  
position degrees: 48...56

Testing:  
1st rack travel in: 10.00  
Speed rpm : 1190...1200  
2nd rack travel in: 4.00  
Speed rpm : 1215...1245  
3rd rack travel in: 4.00  
Speed rpm : 1240...1270  
4th rack travel in: 1400  
Speed rpm : 0.30...1.40

#### LOW IDLE 1

Control lever

position degrees: 14...22

Setting point w/out bumper spring

Speed rpm : 325

Rack travel in mm : 8.5

#### Testing:

Speed rpm : 100

Speed rpm : 325

Rack travel in mm : 8.40...8.60

Rack travel in mm : 2.00

Speed rpm : 455...515

#### TORQUE CONTROL

Dimension a mm : 0.80

Torque control curve - 1st version

1st speed rpm : 1150

Rack travel in m: 11.00...11.10

2nd speed rpm : 700

Rack travel in m: 11.80...11.90

3rd speed rpm : 1015

Rack travel in m: 11.50...11.70

#### FUEL DELIVERY CHARACTERISTICS

##### 1st version

Speed rpm : 1150

Del. quantity cm<sup>3</sup>/ : 70.5...73.5

1000 s: (68.5...75.5)

#### BREAKAWAY

##### 1st version

1mm rack travel less than

full load rack tr: 10.00

Speed rpm : 1190...1200

#### STARTING FUEL DELIVERY

Speed rpm : 100

Del. quantity cm<sup>3</sup>/ : 133.0...143.0

1000 s: (130.0...146.0)

Rack travel in mm : 19.50...21.00

Remarks:

: D6007

#### APPLICATION

Tractor (tractor engines)

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MM 3,1 b 1  
Edition : 19.02.88  
Replaces : 11.12.87  
Test oil : ISO-4113

Combination no. : 0 400 863 008

Injection pump  
Pump designation : PES3A900320/3RS2658  
EP type number : 0 410 893 004  
Governor  
Governor design. : RSV325...1500A2C505-  
2R

Governer no. : 0 420 233 196

Customer-spec. information  
Customer : MM

Engine : D226B-3

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve  
: 1 417 413 000

Inlet press., bar : 1.00

Test nozzle holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter  
x Wall thickness  
x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values -----

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2,95...3,05  
: (2,90...3,10)

Rack travel in mm : 9,00...12,00

Firing order : 1- 2- 3

Phasing : 0-120-240

Tolerance + - ° : 0.50 (0.75)

## BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 9.00...0.00

& maximum rack tra: 21.00

Difference ° CS : 3.50...4.50

## BASIC SETTING

1st speed rpm : 1500

Rack travel in mm : 11.20...11.30

Del. quantity cm<sup>3</sup>/ : 8.9...9.0

100 s: (8.7...9.2)

Spread cm<sup>3</sup> : 0.3

100 s: (0.5)

2nd speed rpm : 325.0

Rack travel in mm : 10.0...10.2

Del. quantity cm<sup>3</sup>/ : 4.6...5.2

100 s: (4.4...5.4)

Spread cm<sup>3</sup> : 0.2

100 s: (0.4)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 2.50

## FULL LOAD DELIV. AT FULL LOAD STOP

### 1st version

Speed rpm : 1500

Del. quantity : 89.5...90.5

1000 : (87.5...92.5)

Spread cm<sup>3</sup> : 3.00

1000 : (5.00)

## RATED SPEED

### 1st version

Control lever

position degrees: 54...62

### Testing:

1st rack travel in: 10.20

Speed rpm : 1540...1550

2nd rack travel in: 4.00  
Speed rpm : 1590...1620  
3rd rack travel in: 4.00  
Speed rpm : 1605...1635  
4th rack travel in: 1765  
Speed rpm : 0.30...1.40

#### LOW IDLE 1

Control lever  
position degrees: 11...19  
Setting point w/out bumper spring  
Speed rpm : 325  
Rack travel in mm : 9.6

#### Testing:

Speed rpm : 100  
Minimum rack trave: 19.50  
Speed rpm : 325  
Rack travel in mm : 10.00...10.20  
Rack travel in mm : 2.00  
Speed rpm : 500...560

#### TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 1500  
Rack travel in m: 11.20...11.30  
2nd speed rpm : 500  
Rack travel in m: 11.20...11.40

#### BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 10.20  
Speed rpm : 1540...1550

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 115.0...  
1000 s: (112.0...)  
Rack travel in mm : 16.80

Remarks:

:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : KHD 1 G 3  
Edition : 2.2.88  
Replaces : 9.3.87  
Test oil : ISO-4113

Combination no. : 0 400 864 054

Injection pump  
Pump designation : PES4A85D410/3RS2638  
EP type number : 0 410 884 950  
Governor  
Governor design. : RSV305...1150AOC2168  
L  
Governor no. : 0 420 232 364

Customer-spec. information  
Customer : KHD

Engine : BF4L913

1st version kW : 66.0  
Rated speed : 2300  
2nd version kW : 60.0  
Rated speed : 2300

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve  
: 1 417 413 000

Inlet press., bar : 1.00

Test nozzle holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter  
x Wall thickness  
x Length mm : 6,00X2,00X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values -----

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.50...2.60  
: (2.45...2.65)  
Rack travel in mm : 9.00...12.00  
Firing order : 1- 3- 4- 2

Phasing : 0-90-180-270  
Tolerance + - ° : 0.50 (0.75)

## BASIC SETTING

1st speed rpm : 1110  
Rack travel in mm : 12.30...12.40  
Del. quantity cm<sup>3</sup>/ : 8.0...8.1  
100 s : (7.8...8.3)  
Spread cm<sup>3</sup> : 0.3  
100 s : (0.4)

2nd speed rpm : 325  
Rack travel in mm : 8.1...8.3  
Del. quantity cm<sup>3</sup>/ : 0.9...1.5  
100 s : (0.7...1.7)  
Spread cm<sup>3</sup> : 0.2  
100 s : (0.4)

## GUIDE SLEEVE POSITION

Control-lever position  
Degree: -3  
Speed rpm : 800  
Rack travel in mm : 0.30...0.70

Governor spring pre-tension  
Click setting x : 4.0

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
Speed rpm : 1110  
Del. quantity : 80.0...81.0  
1000 : (78.0...83.0)  
Spread cm<sup>3</sup> : 3.00  
1000 : (4.50)

2nd version  
Speed rpm : 1150  
Del. quantity cm<sup>3</sup>/ : 74.5...75.5  
1000 s : (72.5...77.5)  
Spread cm<sup>3</sup> : 3.00  
1000 s : (4.50)

## RATED SPEED

1st version  
Control lever  
position degrees: 51...59

#### Testing:

1st rack travel in: 11.30  
Speed rpm : 1155...1165  
2nd rack travel in: 4.00  
Speed rpm : 1250...1280  
3rd rack travel in: 4.00  
Speed rpm : 1320...1350  
4th rack travel in: 1465  
Speed rpm : 0.30...1.40

#### 2nd version

Control lever  
position degrees: 52...60

#### Testing:

1st rack travel in: 9.60  
Speed rpm : 1220...1230  
2nd rack travel in: 4.00  
Speed rpm : 1325...1355  
4th rack travel in: 1475  
Speed rpm : 0.30...1.70

#### LOW IDLE 1

Control lever  
position degrees: 27...35  
Setting point w/out bumper spring  
Speed rpm : 325  
Rack travel in mm : 7.7  
Speed rpm : 325  
Rack travel in mm : 7.60...7.80  
Rack travel in mm : 2.00  
Speed rpm : 700...800

#### TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1110  
Rack travel in m: 12.30...12.40  
2nd speed rpm : 500  
Rack travel in m: 13.10...13.20  
3rd speed rpm : 940  
Rack travel in m: 12.70...12.90

Torque control curve - 2nd version

1st speed rpm : 1150  
Rack travel in m: 10.5...10.6  
2nd speed rpm : 500  
Rack travel in m: 11.2...11.3  
3rd speed rpm : 900  
Rack travel in m: 10.9...11.2

#### FUEL DELIVERY CHARACTERISTICS

##### 1st version

Speed rpm : 700  
Del. quantity cm<sup>3</sup>/ : 79.5...81.5  
1000 s: (77.0...84.0)

##### 2nd version

H18

Speed rpm : 800  
Del. quantity cm<sup>3</sup>/ : 65.5...68.5  
1000 s: (63.5...70.5)

#### BREAKAWAY

##### 1st version

1mm rack travel less than

full load rack tr: 11.30

Speed rpm : 1155...1165

##### 2nd version

1mm rack travel less than

full load rack tr: 9.50

Speed rpm : 1220...1230

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del. quantity cm<sup>3</sup>/ : 100.0...110.0  
1000 s: (97.0...113.0)  
Rack travel in mm : 16.80...17.20

#### Remarks:

: S29=DX 92=DX4.70 (1)  
: S28=DX 86=DX4.50 (2)

#### APPLICATION

Tractor (tractor engines)

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : KHD 4,1 d 3  
Edition : 12.02.88  
Replaces : 12.9.86  
Test oil : ISO-4113

Combination no. : 0 400 864 060

Injection pump  
Pump designation : PES4A8SD410/3RS2638  
EP type number : 0 410 884 950  
Governor  
Governor design. : RSV325...1400A8C707L  
Governor no. : 0 420 232 336

Customer-spec. information  
Customer : KHD

Engine : BF4L913

1st version kW : 78.0  
Rated speed : 2500

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 000

Inlet press., bar : 1.00

Test nozzle holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter  
x Wall thickness  
x Length mm : 6.00x2.00x600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values -----

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.50...2.60  
: (2.45...2.65)

Rack travel in mm : 9.00...12.00

H19

Firing order : 1- 3- 4- 2

Phasing : 0-90-180-270

Tolerance + - ° : 0.50 (0.75)

## BASIC SETTING

1st speed rpm : 1250

Rack travel in mm : 12.70...12.80

Del.quantity cm3/ : 8.2...8.3

100 s: (8.0...8.5)

Spread cm3 : 0.3

100 s: (0.4)

2nd speed rpm : 325.0

Rack travel in mm : 8.5...8.7

Del.quantity cm3/ : 0.9...1.5

100 s: (0.7...1.7)

Spread cm3 : 0.2

100 s: (0.4)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 5.25

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1250

Aneroid pressure h: 700

Del.quantity : 82.5...83.5

1000 : (80.5...85.5)

Spread cm3 : 3.00

1000 : (4.50)

## RATED SPEED

1st version

Control lever

position degrees: 58...66

Testing:

1st rack travel in: 11.70

Speed rpm : 1290...1300

2nd rack travel in: 4.00

Speed rpm : 1340...1370

3rd rack travel in: 4.00



Speed rpm : 1390...1420  
4th rack travel in: 1560  
Speed rpm : 0.30...1.40

#### LOW IDLE 1

Control lever  
position degrees: 18...26  
Setting point w/out bumper spring  
Speed rpm : 325  
Rack travel in mm : 8.1

#### Testing:

Speed rpm : 100  
Minimum rack travel: 19.50  
Speed rpm : 325  
Rack travel in mm : 8.50...8.70  
Rack travel in mm : 2.00  
Speed rpm : 630...690

#### TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 1250  
Rack travel in m: 12.70...12.80  
2nd speed rpm : 500  
Rack travel in m: 13.60...13.70  
4th speed rpm : 1015  
Rack travel in m: 13.10...13.30

Aneroid/Altitude  
Compensator Test

#### 1st version

Setting  
Speed rpm : 500  
Rack travel in mm : 700  
Contr.-rod trav.mm: 13.60...13.70

#### Measurement

Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 12.30...12.40  
2nd pressure hPa : 410  
Rack travel in m: 13.20...13.30  
3rd pressure hPa : 250  
Rack travel in m: 12.60...12.80

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: 700  
Speed rpm : 850  
Del.quantity cm<sup>3</sup>/ : 84.5...86.5  
1000 s: (82.0...89.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm<sup>3</sup>/ : 59.5...61.5  
1000 s: (57.5...63.5)

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 11.70  
Speed rpm : 1290...1300

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 95.0...105.0  
1000 s: (92.0...108.0)  
Rack travel in mm : 17.10...17.50

Remarks:

:

Test electrically-released starting  
quantity (EES) with 12 volts

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : KHD 1 g 34  
 Edition : 12.02.88  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 400 864 070  
 Injection pump  
 Pump designation : PES4A85D410/3RS2732  
 EP type number : 0 410 884 947  
 Governor  
 Governor design. : RSV325...1175A8C2223  
 -2L  
 Governor no. : 0 420 232 484

Customer-spec. information  
 Customer : KHD

Engine : F4L913

1st version kW : 56.0  
 Rated speed : 2350

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve  
 : 1 417 413 000

Inlet press., bar : 1.00

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00x2.00x600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values -----

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.50...2.60  
 : (2.45...2.65)

Rack travel in mm : 9.00...12.00  
 Firing order : 1- 3- 4- 2

Phasing : 0-90-180-270

Tolerance + - ° : 0.50 (0.75)

## BASIC SETTING

1st speed rpm : 1175

Rack travel in mm : 9.90...10.00

Del. quantity cm<sup>3</sup>/ : 6.8...6.9

100 s: (6.6...7.1)

Spread cm<sup>3</sup> : 0.3

100 s: (0.4)

2nd speed rpm : 325.0

Rack travel in mm : 5.9...6.1

Del. quantity cm<sup>3</sup>/ : 0.8...1.4

100 s: (0.6...1.6)

Spread cm<sup>3</sup> : 0.2

100 s: (0.4)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 5.00

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1175

Del. quantity : 68.0...69.0

1000 : (66.0...71.0)

Spread cm<sup>3</sup> : 3.00

1000 : (4.50)

## RATED SPEED

1st version

Control lever

position degrees: 52...60

Testing:

1st rack travel in: 8.90

Speed rpm : 1215...1225

2nd rack travel in: 4.00

Speed rpm : 1245...1275

3rd rack travel in: 4.00

Speed rpm : 1250...1280  
4th rack travel in: 1425  
Speed rpm : 0.30...1.40

#### LOW IDLE 1

Control lever  
position degrees: 16...24  
Setting point w/out bumper spring  
Speed rpm : 325  
Rack travel in mm : 5.6

#### Testing:

Speed rpm : 100  
Minimum rack trave: 19.50  
Speed rpm : 325  
Rack travel in mm : 5.90...6.10  
Rack travel in mm : 2.00  
Speed rpm : 450...510

#### TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 1175  
Rack travel in m: 9.90...10.00  
2nd speed rpm : 500  
Rack travel in m: 10.50...10.60  
4th speed rpm : 820  
Rack travel in m: 10.10...10.30

#### FUEL DELIVERY CHARACTERISTICS

##### 1st version

Speed rpm : 800  
Del.quantity cm3/ : 61.0...63.0  
1000 s: (58.5...65.5)

#### BREAKAWAY

##### 1st version

1mm rack travel less than

full load rack tr: 8.90  
Speed rpm : 1215...1225

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 115.0...125.0  
1000 s: (112.0...128.0)  
Rack travel in mm : 17.10...17.30

Remarks:

: RENAULT

#### APPLICATION

Tractor (tractor engines)

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB 4,0 b  
 Edition : 26.02.88  
 Replaces : 21.8.87  
 Test oil : ISO-4113

Combination no. : 0 400 874 240

Injection pump  
 Pump designation : PES4A90D41ORS2666  
 EP type number : 0 410 894 029  
 Governor  
 Governor design. : RSV350...1400AOC2006  
 -1L  
 Governor no. : 0 420 232 449

Customer-spec. information  
 Customer : DAIMLER-BENZ

Engine : OM364

1st version kW : 66.0  
 Rated speed : 2800

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve  
 : 1 417 413 000

Inlet press., bar : 1.00

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00x1.50x600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values -----

## BEGINNING OF DELIVERY

Test pressure, bar : 25...27

Prestroke mm : 2.25...2.35  
 : (2.20...2.40)

Rack travel in mm : 9.00...12.00  
 Firing order : 1- 3- 4- 2

Phasing : 0-90-180-270  
 Tolerance + - ° : 0.50 (0.75)

## BASIC SETTING

1st speed rpm : 1380  
 -----  
 Rack travel in mm : 10.40...10.50  
 -----  
 Del. quantity cm<sup>3</sup>/ : 6.3...6.4  
 -----  
 100 s : (6.1...6.6)  
 -----  
 Spread cm<sup>3</sup> : 0.3  
 -----  
 100 s : (0.4)  
 -----  
 2nd speed rpm : 350.0  
 Rack travel in mm : 7.8...8.0  
 Del. quantity cm<sup>3</sup>/ : 0.6...1.0  
 100 s : (0.4...1.2)  
 Spread cm<sup>3</sup> : 0.2  
 100 s : (0.4)

## GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -3  
 Speed rpm : 800  
 Rack travel in mm : 0.30...0.70

Governor spring pre-tension  
 Click setting x : 4.50

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 1380  
 Del. quantity : 63.0...64.0  
 1000 : (61.0...66.0)  
 Spread cm<sup>3</sup> : 3.00  
 1000 : (4.50)

## RATED SPEED

1st version  
 Control lever  
 position degrees: 59...67

Testing:  
 1st rack travel in: 9.40  
 Speed rpm : 1430...1440  
 2nd rack travel in: 4.00  
 Speed rpm : 1480...1510  
 4th rack travel in: 1575

Speed rpm : 0.30...1.70

#### LOW IDLE 1

Control lever

position degrees: 24...32

Setting point w/out bumper spring

Speed rpm : 350

Rack travel in mm : 7.9

#### Testing:

Speed rpm : 100

Minimum rack trave: 19.50

Speed rpm : 350

Rack travel in mm : 7.80...8.00

Rack travel in mm : 2.00

Speed rpm : 480...540

#### SET IDLE AUXILIARY SPRING

Rack travel in mm : 2.00

#### TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1380

Rack travel in m: 10.40...10.50

2nd speed rpm : 500

Rack travel in m: 11.70...11.80

3rd speed rpm : 900

Rack travel in m: 11.10...11.30

#### FUEL DELIVERY CHARACTERISTICS

##### 1st version

Speed rpm : 500

Del.quantity cm3/ : 52.0...54.0

1000 s: (49.5...56.5)

Spread cm3 : -

1000 s: (5.5)

#### BREAKAWAY

##### 1st version

1mm rack travel less than

full load rack tr: 9.40

Speed rpm : 1430...1440

#### STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/ : 78.0...88.0

1000 s: (75.0...91.0)

Rack travel in mm : 16.30...16.70

#### LOW IDLE

Speed rpm : 350

Rack travel in mm : 7.80...8.00

H24

Del.quantity cm3/ : 6.0...10.0

1000 s: (4.0...12.0)

Spread cm3 : 2.50

1000 s: (4.50)

Remarks:

:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB 4,0 b 1  
 Edition : 26.02.88  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 400 874 246  
 Injection pump  
 Pump designation : PES4490D41ORS2666  
 EP type number : 0 410 894 029  
 Governor  
 Governor design. : RSV350...1250AOC2006  
 -5L  
 Governor no. : 0 420 232 497

Customer-spec. information  
 Customer : DAIMLER-BENZ

Engine : OM364

1st version kW : 63.0  
 Rated speed : 2500

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve  
 : 1 417 413 000

Inlet press., bar : 1.00

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00x1.50x600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values -----

## BEGINNING OF DELIVERY

Test pressure, bar : 25...27

Prestroke mm : 2.25...2.35  
 : (2.20...2.40)

Rack travel in mm : 9.00...12.00  
 Firing order : 1- 3- 4- 2

Phasing : 0-90-180-270  
 Tolerance + - ° : 0.50 (0.75)

## BASIC SETTING

1st speed rpm : 1230

Rack travel in mm : 10.70...10.80

Del. quantity cm<sup>3</sup>/ : 6.2...6.3

100 s : (6.0...6.5)

Spread cm<sup>3</sup> : 0.3

100 s : (0.5)

2nd speed rpm : 350.0

Rack travel in mm : 7.9...8.1

Del. quantity cm<sup>3</sup>/ : 1.0...1.4

100 s : (0.8...1.6)

Spread cm<sup>3</sup> : 0.2

100 s : (0.4)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 5.25

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1230

Del. quantity : 62.0...63.0

1000 : (60.0...65.0)

Spread cm<sup>3</sup> : 3.00

1000 : (5.00)

## RATED SPEED

1st version

Control lever

position degrees: 58...66

Testing:

1st rack travel in: 9.70

Speed rpm : 1270...1280

2nd rack travel in: 4.00

Speed rpm : 1350...1380

4th rack travel in: 1520

Speed rpm : 0.30...1.40

#### LOW IDLE 1

Control lever

position degrees: 31...39

Setting point w/out bumper spring

Speed rpm : 350

Rack travel in mm : 8.0

#### Testing:

Speed rpm : 100

Minimum rack trave: 19.50

Speed rpm : 350

Rack travel in mm : 7.90...8.10

Rack travel in mm : 2.00

Speed rpm : 480...540

#### SET IDLE AUXILIARY SPRING

Rack travel in mm : 2.00

#### TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1230

Rack travel in m: 10.70...10.80

2nd speed rpm : 500

Rack travel in m: 12.00...12.10

3rd speed rpm : 880

Rack travel in m: 11.40...11.60

#### FUEL DELIVERY CHARACTERISTICS

##### 1st version

Speed rpm : 500

Del.quantity cm3/ : 54.0...56.0

1000 s: (51.5...58.5)

#### BREAKAWAY

##### 1st version

1mm rack travel less than

full load rack tr: 9.70

Speed rpm : 1270...1280

#### STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/ : 78.0...88.0

1000 s: (75.0...91.0)

Rack travel in mm : 16.30...16.70

#### LOW IDLE

Speed rpm : 350

Rack travel in mm : 7.90...8.10

Del.quantity cm3/ : 10.0...14.0

1000 s: (8.0...16.0)

Spread cm3 : 2.50

1000 s: (4.50)

Remarks:

:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : RAB 9,7 a 4  
 Edition : 05.02.88  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 400 876 266  
 Injection pump  
 Pump designation : PES6A9SD410RS2108  
 EP type number : 0 410 896 983  
 Governor  
 Governor design. : RSV450...1000A1C2004  
 DL  
 Governor no. : 0 420 233 219

Customer-spec. information  
 Customer : RABA

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42  
 Overflow valve : 1 417 413 000  
 Inlet press., bar : 1.00  
 Test nozzle holder  
 assembly : 0 681 343 009  
 Opening  
 pressure, bar : 172...175  
 Test lines : 1 680 750 014  
 Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values -----

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27  
 Prestroke mm : 1.70...1.80  
 : (1.65...1.85)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1000  
 Rack travel in mm : 11.10...11.20  
 Del. quantity cm3/ : 10.7...10.9  
 100 s: (10.5...11.1)  
 Spread cm3 : 0.3  
 100 s: (0.6)  
 2nd speed rpm : 450.0  
 Rack travel in mm : 5.9...6.1  
 Del. quantity cm3/ : 1.1...1.7  
 100 s: (0.8...1.9)  
 Spread cm3 : 0.3  
 100 s: (0.5)

## GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -3  
 Speed rpm : 800  
 Rack travel in mm : 0.30...0.70

Governor spring pre-tension  
 Click setting x : 6.25

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 1000  
 Del. quantity : 107.5...109.5  
 1000 : (105.5...111.5)  
 Spread cm3 : 3.00  
 1000 : (6.00)

## RATED SPEED

1st version  
 Control lever  
 position degrees: 57...65

Testing:  
 1st rack travel in: 10.10  
 Speed rpm : 1040...1050  
 2nd rack travel in: 4.00  
 Speed rpm : 1085...1115  
 4th rack travel in: 1250  
 Speed rpm : 0.30...1.40

## LOW IDLE 1



Control lever  
position degrees: 31...39  
Setting point w/out bumper spring  
Speed rpm : 450  
Rack travel in mm : 5.5

Testing:  
Speed rpm : 100  
Minimum rack trave: 19.50  
Speed rpm : 450  
Rack travel in mm : 5.40...5.60  
Rack travel in mm : 2.00  
Speed rpm : 475...535

TORQUE CONTROL  
Dimension a mm : 2.00  
Torque control curve - 1st version  
1st speed rpm : 1000  
Rack travel in m: 11.10...11.20  
2nd speed rpm : 800  
Rack travel in m: 12.60...12.70  
3rd speed rpm : 500  
Rack travel in m: 12.60...12.80

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Speed rpm : 800  
Del.quantity cm3/ : 124.5...129.0  
1000 s: (122.5...131.0)  
Speed rpm : 500  
Del.quantity cm3/ : 125.5...129.5  
1000 s: (123.5...131.5)

#### BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 10.10  
Speed rpm : 1040...1050

#### LOW IDLE

Speed rpm : 450  
Rack travel in mm : 5.90...6.10  
Del.quantity cm3/ : 11.0...17.0  
1000 s: (8.5...19.5)  
Spread cm3 : 3.00  
1000 s: (5.00)

Remarks:

:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : KHD 1 g 12  
 Edition : 07.03.88  
 Replaces : 12.11.87  
 Test oil : ISO-4113

Combination no. : 0 400 876 320

Injection pump  
 Pump designation : PES6A85D41ORS2591  
 EP type number : 0 410 886 903  
 Governor  
 Governor design. : RSV325...1150A8C2020  
 Governor no. : 0 420 232 345

Customer-spec. information  
 Customer : KHD

Engine : BF6L913

1st version kW : 117.0  
 Rated speed : 2300

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve  
 : 1 417 413 000

Inlet press., bar : 1.00

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values -----

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.50...2.60  
 : (2.45...2.65)  
 Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

## BASIC SETTING

1st speed rpm : 1200

Rack travel in mm : 12.30...12.40

Del. quantity cm3/ : 8.4...8.5

100 s: (8.2...8.7)

Spread cm3 : 0.3

100 s: (0.4)

2nd speed rpm : 325.0

Rack travel in mm : 7.9...8.1

Del. quantity cm3/ : 0.8...1.4

100 s: (0.6...1.6)

Spread cm3 : 0.2

100 s: (0.4)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 6.00

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1200

Aneroid pressure h: 700

Del. quantity : 84.0...85.0

1000 : (82.0...87.0)

Spread cm3 : 3.00

1000 : (4.50)

## RATED SPEED

1st version

Control lever

position degrees: 55...63

Testing:

1st rack travel in: 11.30

Speed rpm : 1240...1250

2nd rack travel in: 4.00

Speed rpm : 1295...1325

3rd rack travel in: 4.00

Speed rpm : 1350...1380  
4th rack travel in: 1515  
Speed rpm : 0.30...1.40

#### LOW IDLE 1

Control lever  
position degrees: 18...26  
Setting point w/out bumper spring  
Speed rpm : 325  
Rack travel in mm : 7.5

#### Testing:

Speed rpm : 100  
Minimum rack travel: 19.50  
Speed rpm : 325  
Rack travel in mm : 7.40...7.60  
Rack travel in mm : 2.00  
Speed rpm : 640...700

#### TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 1200  
Rack travel in m: 12.30...12.40  
2nd speed rpm : 650  
Rack travel in m: 13.10...13.20  
3rd speed rpm : 925  
Rack travel in m: 12.80...13.00

Aneroid/Altitude  
Compensator Test

#### 1st version

Setting  
Speed rpm : 500  
Rack travel in mm : 700  
Contr.-rod trav.mm: 13.10...13.20

#### Measurement

Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 12.30...12.40  
2nd pressure hPa : 145  
Rack travel in m: 12.60...12.70  
3rd pressure hPa : 80  
Rack travel in m: 12.20...12.40

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: 700  
Speed rpm : 650  
Del.quantity cm3/ : 79.0...81.0  
1000 s: (76.5...83.5)  
Speed rpm : 1000  
Del.quantity cm3/ : 83.0...85.0  
1000 s: (80.5...87.5)  
Aneroid pressure h: -

Speed rpm : 500  
Del.quantity cm3/ : 67.0...68.0  
1000 s: (65.0...70.0)

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 11.30  
Speed rpm : 1240...1250

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 100.0...110.0  
1000 s: (97.0...113.0)  
Rack travel in mm : 17.30...17.70

Remarks:  
: DX7.10

When adjusting and checking, adjust  
speed regulation to 1210...1220 l/min.  
Afterwards, readjust speed regulation  
to 1160...1170 l/min.

#### APPLICATION

Tractor (tractor engines)

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB 19,1 o  
Edition : 11.03.88  
Replaces : 12.9.86  
Test oil : ISO-4113  
  
Combination no. : 0 401 840 105  
  
Injection pump  
Pump designation : PE12P110A320LS855  
EP type number : 0 411 810 046  
Governor  
Governor design. : RQV350...1150PA476  
Governor no. : 0 421 813 227

Customer-spec. information  
Customer : DAIMLER-BENZ

Engine : OM 404 A

1st version kW : 368.0  
Rated speed : 2300

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
quantity min. 1/h: 150...170

Test nozzle holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
x Wall thickness  
x Length mm : 6.00X1.50X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values -----

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.20...3.30  
: (3.15...3.35)  
Rack travel in mm : 9.00...12.00  
Firing order : 12- 1- 5- 9- 8- 3-  
4- 11- 10- 2- 6- 7

Phasing : 0-45-60-105-120-165-  
180-225-240-285-300-

Phasing : 345  
Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 12

## BASIC SETTING

1st speed rpm : 1130

Rack travel in mm : 11.80...11.90

Del. quantity cm3/ : 13.4...13.6

100 s: (13.1...13.8)

Spread cm3 : 0.4

100 s: (0.8)

2nd speed rpm : 350.0

Rack travel in mm : 6.8...7.1

Del. quantity cm3/ : 1.4...2.0

100 s: (1.1...2.2)

Spread cm3 : 0.4

100 s: (0.7)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1150

Rack travel in mm : 15.20...17.80

## FULL LOAD DELIV. AT FULL LOAD STOP

### 1st version

Speed rpm : 1130

Aneroid pressure h: 700

Del. quantity : 134.0...136.0

1000 : (131.5...138.5)

Spread cm3 : 4.00

1000 : (8.00)

## RATED SPEED

### 1st version

Control lever

position degrees: 62...70

Testing:

1st rack travel in: 10.80

Speed rpm : 1185...1195  
2nd rack travel in: 4.00  
Speed rpm : 1275...1305  
4th rack travel in: 1450  
Speed rpm : 0.00...1.00

#### LOW IDLE 1

Control lever  
position degrees: 14...22

#### Testing:

Speed rpm : 100  
Minimum rack travel: 8.50  
Speed rpm : 350  
Rack travel in mm : 6.80...7.10  
Rack travel in mm : 2.00  
Speed rpm : 580...640

#### TORQUE CONTROL

Dimension a mm : 0.60  
Torque control curve - 1st version  
1st speed rpm : 1130  
Rack travel in m: 11.80...11.90  
2nd speed rpm : 700  
Rack travel in m: 12.40...12.50  
3rd speed rpm : 970  
Rack travel in m: 12.00...12.10

Aneroid/Altitude  
Compensator Test

#### 1st version

##### Setting

Speed rpm : 500  
Rack travel in mm : -  
Contr.-rod trav.mm: 11.60...11.90

##### Measurement

Speed 1/min : 500

1st pressure hPa : 350  
Rack travel in m: 11.90...12.00

#### START CUT-OUT

Speed 1/min : 270 (290)

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: 700  
Speed rpm : 700  
Del.quantity cm3/ : 135.0...139.0  
1000 s: (132.0...142.0)  
Spread cm3 : 6.00  
1000 s: (9.0)  
Aneroid pressure h: -  
Speed rpm : 500

Del.quantity cm3/ : 121.0...123.0  
1000 s: (118.5...125.5)  
Spread cm3 : 6.00  
1000 s: (9.00)

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 10.80  
Speed rpm : 1185...1195

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 130.0...150.0  
1000 s: (126.0...154.0)

Remarks:

:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB 21,9 d  
Edition : 05.02.88  
Replaces : 11.85  
Test oil : ISO-4113

Combination no. : 0 401 840 713

Injection pump  
Pump designation : PE12P120A320LS3819-2  
EP type number : 0 411 820 705  
Governor  
Governor design. : RQ300/1050PA656  
Governor no. : 0 421 801 190

Customer-spec. information  
Customer : DAIMLER-BENZ

Engine : OM424LA

1st version kW : 441.0  
Rated speed : 2100

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
quantity min. 1/h: 150...170

Test nozzle holder  
assembly : 1 688 901 019

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
x Wall thickness  
x Length mm : 6.00x1.50x1000

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values -----

# BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.00...4.10  
(3.95...4.15)  
Rack travel in mm : 9.00...12.00  
Firing order : 12- 1- 5- 9- 8- 3-  
4- 11- 10- 2- 6- 7

Phasing : 0-45-60-105-120-165-  
180-225-240-285-300-  
345

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 12

## BASIC SETTING

1st speed rpm : 1050

Rack travel in mm : 12.00...12.10

Del. quantity cm3/ : 18.2...18.4

100 s: (17.9...18.7)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 300.0  
Rack travel in mm : 5.5...5.7  
Del. quantity cm3/ : 1.4...2.0  
100 s: (1.1...2.3)  
Spread cm3 : 0.8  
100 s: (1.2)

## GUIDE SLEEVE POSITION

Control-lever position  
Degree: -2

Speed rpm : 600  
Rack travel in mm : 19.10...20.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
Speed rpm : 1050  
Aneroid pressure h: 800  
Del. quantity : 182.0...184.0  
1000 : (179.0...187.0)  
Spread cm3 : 5.00  
1000 : (9.00)

## RATED SPEED

1st version

Setting point:

Speed rpm : 600  
Rack travel in mm : 19.9

Testing:

1st rack travel in: 11.00  
Speed rpm : 1085...1095  
2nd rack travel in: 4.00  
Speed rpm : 1165...1195  
4th rack travel in: 1300  
Speed rpm : 0.00...1.50

LOW IDLE 1

Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 5.6

Testing:

Speed rpm : 200  
Minimum rack travel: 7.00  
Speed rpm : 300  
Rack travel in mm : 5.50...5.70  
Rack travel in mm : 2.00  
Speed rpm : 360...400

Aneroid/Altitude  
Compensator Test

1st version

Setting  
Speed rpm : 500  
Rack travel in mm : -  
Contr.-rod trav.mm: 10.70...10.80

Measurement

Speed 1/min : 500

1st pressure hPa : 490  
Rack travel in m: 11.20...11.40  
2nd pressure hPa : 590  
Rack travel in m: 12.00...12.20

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 141.0...143.0  
1000 s: (138.0...146.0)  
Spread cm3 : 8.00  
1000 s: (12.0)

BREAKAWAY

J06

1st version  
1mm rack travel less than

full load rack tr: 11.00  
Speed rpm : 1085...1095

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 170.0...190.0  
1000 s: (166.0...194.0)

Remarks:

:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB 11,8 a 1  
 Edition : 11.03.88  
 Replaces : 5.85  
 Test oil : ISO-4113  
 Combination no. : 0 401 846 194  
 Injection pump  
 Pump designation : PE6P100A72ORS15  
 EP type number : 0 411 806 106  
 Governor  
 Governor design. : RQ250/1100PA111DR  
 Governor no. : 0 421 803 045

Customer-spec. information  
 Customer : DAIMLER-BENZ

Engine : OM 355

1st version kW : 154.5  
 Rated speed : 2200

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
 quantity min. 1/h: 100...120

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values -----

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.80...2.90  
 : (2.75...2.95)

Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1090

Rack travel in mm : 12.00...12.10

Del. quantity cm3/ : 10.0...10.2

100 s: (9.8...10.4)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 250.0

Rack travel in mm : 7.9...8.1

Del. quantity cm3/ : 1.7...2.3

100 s: (1.4...2.5)

Spread cm3 : 0.3

100 s: (0.5)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 600

Rack travel in mm : 15.50...16.50

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1090

Del. quantity : 100.0...102.0

1000 : (98.0...104.0)

Spread cm3 : 3.00

1000 : (6.00)

## RATED SPEED

1st version

Setting point:

Speed rpm : 600

Rack travel in mm : 16.0

Testing:

1st rack travel in: 11.00

Speed rpm : 1135...1150

2nd rack travel in: 4.00

Speed rpm : 1210...1240

4th rack travel in: 1300



Speed rpm : 0.00...1.00

#### LOW IDLE 1

Setting point w/out bumper spring

Speed rpm : 250

Rack travel in mm : 6.0

#### Testing:

Speed rpm : 100

Minimum rack trave: 7.00

Speed rpm : 250

Rack travel in mm : 5.90...6.10

Rack travel in mm : 2.00

Speed rpm : 385...425

#### TORQUE CONTROL

Dimension a mm : ?

Torque control curve - 1st version

1st speed rpm : 1090

Rack travel in m: 12.00...12.10

2nd speed rpm : 450

Rack travel in m: 12.60...12.70

3rd speed rpm : 700

Rack travel in m: 12.30...12.40

#### FUEL DELIVERY CHARACTERISTICS

##### 1st version

Speed rpm : 700

Del.quantity cm3/ : 96.0...99.0

1000 s: (94.0...101.0)

Speed rpm : 450

Del.quantity cm3/ : 90.0...94.0

1000 s: (88.0...96.0)

#### BREAKAWAY

##### 1st version

1mm rack travel less than

full load rack tr: 11.00

Speed rpm : 1135...1150

#### STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/ : 150.0...170.0

1000 s: (146.0...174.0)

Remarks:

:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : BET 8,8 b 1  
 Edition : 12.02.88  
 Replaces : 18.12.87  
 Test oil : ISO-4113  
 Combination no. : 0 401 846 489  
 Injection pump  
 Pump designation : PE6P120A320RS377  
 EP type number : 0 411 826 108  
 Governor  
 Governor design. : RQV275...1200PA425-2  
 Governor no. : 0 421 813 403

Customer-spec. information  
 Customer : RVI

Engine : MIDS 062030

1st version kW : 158.1  
 Rated speed : 2400

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 1 688 901 019

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values -----

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.80...2.90  
 : (2.75...2.95)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1200

Rack travel in mm : 12.60...12.70

Del. quantity cm<sup>3</sup>/ : 15.0...15.2

100 s: (14.7...15.5)

Spread cm<sup>3</sup> : 0.5

100 s: (0.9)

2nd speed rpm : 275.0

Rack travel in mm : 7.0...7.2

Del. quantity cm<sup>3</sup>/ : 1.1...1.7

100 s: (0.8...2.0)

Spread cm<sup>3</sup> : 0.8

100 s: (1.2)

(B) Setting of injection pump  
 with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 275  
 travel mm : 1.00...1.20

2nd speed rpm : 425  
 travel mm : 3.00...3.50

3rd speed rpm : 900  
 travel mm : 5.60...5.90

4th speed rpm : 1200  
 travel mm : 7.60...7.70

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1275

Rack travel in mm : 15.20...17.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1200

Aneroid pressure h: 700

Del. quantity : 150.0...152.0

1000 : (147.0...155.0)

Spread cm3 : 5.00  
1000 : (9.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 60...68

Testing:  
1st rack travel in: 11.60  
Speed rpm : 1245...1255  
2nd rack travel in: 4.00  
Speed rpm : 1375...1405  
4th rack travel in: 1500  
Speed rpm : 0.00...1.00

LOW IDLE 1  
Control lever  
position degrees: 6...14

Testing:  
Speed rpm : 200  
Minimum rack travel: 8.10  
Speed rpm : 275  
Rack travel in mm : 5.40...5.60

CONSTANT REGULATION  
Speed rpm : 275...375

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 500  
Rack travel in mm : 700  
Contr.-rod trav.mm: 12.60...12.70

Measurement  
Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 11.10...11.20  
2nd pressure hPa : 190  
Rack travel in m: 12.20...12.30  
3rd pressure hPa : 160  
Rack travel in m: 11.50...11.70

#### START CUT-OUT

Speed 1/min : 195 (215)

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: -  
Speed rpm : 500

Del.quantity cm3/ : 76.0...78.0  
1000 s: (73.0...81.0)

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: -1.00  
Speed rpm : 1245...1255

#### LOW IDLE

Speed rpm : 275  
Rack travel in mm : 5.40...5.60  
Del.quantity cm3/ : 11.0...17.0  
1000 s: (8.0...20.0)  
Spread cm3 : 8.00  
1000 s: (12.00)

Remarks:  
:

APPLICATION  
Omnibus

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : FIA 13,8 a5  
 Edition : 07.03.88  
 Replaces : 11.12.87  
 Test oil : ISO-4113

Combination no. : 0 401 846 496

Injection pump  
 Pump designation : PE6P12QA72ORS167  
 EP type number : 0 411 826 053  
 Governor  
 Governor design. : RQ225/1100PA703  
 Governor no. : 0 421 801 250

Customer-spec. information  
 Customer : IVECO-FIAT

Engine : 8210.02

1st version kW : 184.0  
 Rated speed : 2200

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 1 688 901 019

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00x1.50x1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values -----

## BEGINNING OF DELIVERY

Test pressure, bar : 25...27

Prestroke mm : 2.00...2.10  
 : (1.95...2.15)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 11.10...11.20

Del. quantity cm3/ : 17.0...17.3

100 s : (16.7...17.6)

Spread cm3 : 0.5

100 s : (0.8)

2nd speed rpm : 225.0

Rack travel in mm : 7.4...7.8

Del. quantity cm3/ : 1.7...2.3

100 s : (1.4...2.6)

Spread cm3 : 0.8

100 s : (1.2)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 550

Rack travel in mm : 15.60...16.40

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100

Del. quantity : 170.0...173.0

1000 : (167.0...176.0)

Spread cm3 : 5.00

1000 : (8.00)

## RATED SPEED

1st version

Setting point:

Speed rpm : 550

Rack travel in mm : 16.0

Testing:

1st rack travel in : 10.10

Speed rpm : 1145...1160

2nd rack travel in: 4.00  
Speed rpm : 1195...1225  
4th rack travel in: 1350  
Speed rpm : 0.00...1.00

#### LOW IDLE 1

Setting point w/out bumper spring  
Speed rpm : 225  
Rack travel in mm : 6.5

#### Testing:

Speed rpm : 100  
Minimum rack travel: 8.00  
Speed rpm : 225  
Rack travel in mm : 6.40...6.60  
Rack travel in mm : 2.00  
Speed rpm : 340...380

#### TORQUE CONTROL

Dimension a mm : -  
Torque control curve - 1st version  
1st speed rpm : 1100  
Rack travel in m: 11.10...11.20  
2nd speed rpm : 550  
Rack travel in m: 11.10...11.30

#### BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 10.10  
Speed rpm : 1145...1160

#### STARTING FUEL DELIVERY

Speed rpm : 100

Remarks:

:

Check electrically unlatched starting  
fuel delivery (EES) with 24 volt.

On activation of the starting solenoid,  
the start position must be reached.

#### APPLICATION

Omnibus

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : RVI 9,8 b 4  
 Edition : 11.03.88  
 Replaces : 15.1.88  
 Test oil : ISO-4113  
 Combination no. : 0 401 846 497  
 Injection pump  
 Pump designation : PE6P120A320RS438-1  
 EP type number : 0 411 826 133  
 Governor  
 Governor design. : RQV275...1200PA648-2  
 Governor no. : 0 421 813 490

Customer-spec. information  
 Customer : RVI

Engine : MIDS062030

1st version kW : 150.0  
 Rated speed : 2400

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 1 688 901 019

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values -----

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.50...3.60  
 : (3.45...3.65)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1200  
 -----  
 Rack travel in mm : 10.20...10.30  
 -----  
 Del. quantity cm3/ : 13.3...13.5  
 -----  
 100 s: (13.0...13.8)  
 -----  
 Spread cm3 : 0.5  
 -----  
 100 s: (0.9)  
 -----

2nd speed rpm : 275.0  
 Rack travel in mm : 4.3...4.5  
 Del. quantity cm3/ : 1.5...2.1  
 100 s: (1.2...2.4)  
 Spread cm3 : 0.8  
 100 s: (1.2)

(B) Setting of injection pump  
 with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 275  
 travel mm : 1.20...1.40  
 2nd speed rpm : 450  
 travel mm : 3.30...4.00  
 3rd speed rpm : 850  
 travel mm : 5.90...6.20  
 4th speed rpm : 1200  
 travel mm : 8.20...8.40

## GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -1  
 Speed rpm : 1200  
 Rack travel in mm : 15.20...17.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 1200  
 Del. quantity : 133.0...135.0  
 1000 : (130.0...138.0)

Spread cm3 : 5.00  
1000 : (9.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 61...69

#### Testing:

1st rack travel in: 9.20  
Speed rpm : 1255...1265  
2nd rack travel in: 3.90  
Speed rpm : 1355...1385  
4th rack travel in: 1500  
Speed rpm : 0.00...1.00

#### LOW IDLE 1

Control lever  
position degrees: 8...16

#### Testing:

Speed rpm : 200  
Minimum rack travel: 8.10  
Speed rpm : 275  
Rack travel in mm : 5.70...5.90

#### CONSTANT REGULATION

Speed rpm : 275...360

#### START CUT-OUT

Speed 1/min : 195 (215)

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Speed rpm : 750  
Del. quantity cm3/ : 116.0...122.0  
1000 s: (113.0...125.0)

#### BREAKAWAY

#### 1st version

1mm rack travel less than

full load rack tr: 9.20  
Speed rpm : 1255...1265

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del. quantity cm3/ : 105.0...125.0  
1000 s: (101.0...129.0)

#### LOW IDLE

Speed rpm : 275  
Rack travel in mm : 5.70...5.90

#### Remarks:

:  
Start-of-delivery mark at the "INJ"  
marking

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : RVI 8,8 l  
Edition : 11.03.88  
Replaces : 12.9.86  
Test oil : ISO-4113

Combination no. : 0 401 846 499

Injection pump  
Pump designation : PE6P120A320RS474  
EP type number : 0 411 826 134  
Governor  
Governor design. : RQV275...1200PA425-3  
Governor no. : 0 421 813 441

Customer-spec. information  
Customer : RVI

Engine : MIDS062030

1st version kW : 168.0  
Rated speed : 2400

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 1 688 901 019

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
x Wall thickness  
x Length mm : 6.00x1.50x1000

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values -----

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.50...3.60  
: (3.45...3.65)  
Rack travel in mm : 9.00...12.00  
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1200  
-----  
Rack travel in mm : 11.90...12.00  
-----  
Del. quantity cm3/ : 15.1...15.3  
-----  
100 s: (14.8...15.6)  
-----  
Spread cm3 : 0.5  
-----  
100 s: (0.9)  
-----

2nd speed rpm : 275.0  
Rack travel in mm : 6.0...6.2  
Del. quantity cm3/ : 1.5...2.1  
100 s: (1.2...2.4)  
Spread cm3 : 0.8  
100 s: (1.2)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 275  
travel mm : 1.20...1.40  
2nd speed rpm : 400  
travel mm : 2.90...3.40  
3rd speed rpm : 900  
travel mm : 5.80...6.00  
4th speed rpm : 1200  
travel mm : 7.80...8.00

## GUIDE SLEEVE POSITION

Control-lever position  
Degree: -1  
Speed rpm : 1250  
Rack travel in mm : 15.20...17.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
Speed rpm : 1200  
Aneroid pressure h: 700  
Del. quantity : 151.0...153.0  
1000 : (148.0...156.0)



Spread cm<sup>3</sup> : 5.00  
1000 : (9.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 62...70

Testing:  
1st rack travel in: 10.90  
Speed rpm : 1265...1275  
2nd rack travel in: 4.00  
Speed rpm : 1380...1410  
4th rack travel in: 1500  
Speed rpm : 0.00...1.00

LOW IDLE 1  
Control lever  
position degrees: 8...16

Testing:  
Speed rpm : 200  
Minimum rack travel: 8.40  
Speed rpm : 275  
Rack travel in mm : 5.70...5.90

CONSTANT REGULATION  
Speed rpm : 275...360

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 500  
Rack travel in mm : 700  
Contr.-rod trav.mm: 11.90...12.00

Measurement  
Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 10.70...10.80  
2nd pressure hPa : 195  
Rack travel in m: 11.60...11.70  
3rd pressure hPa : 175  
Rack travel in m: 11.10...11.30

#### START CUT-OUT

Speed 1/min : 195 (215)

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: 700  
Speed rpm : 750

Del.quantity cm<sup>3</sup>/ : 139.0...145.0  
1000 s: (136.0...148.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm<sup>3</sup>/ : 94.0...96.0  
1000 s: (91.0...99.0)

#### BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 10.90  
Speed rpm : 1265...1275

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 105.0...125.0  
1000 s: (101.0...129.0)

#### LOW IDLE

Speed rpm : 275  
Rack travel in mm : 5.70...5.90

Remarks:

:  
Start-of-delivery mark at the "INJ"  
marking

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : DAF 11,6 y4  
 Edition : 11.03.88  
 Replaces : 12.9.86  
 Test oil : ISO-4113  
 Combination no. : 0 401 846 521  
 Injection pump  
 Pump designation : PE6P120A32ORS415-1  
 EP type number : 0 411 826 123  
 Governor  
 Governor design. : RQ250/1100PA417-5  
 Governor no. : 0 421 801 317

Customer-spec. information  
 Customer : DAF

Engine : DKV 1160

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42  
 Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 1 688 901 019

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values -----

## BEGINNING OF DELIVERY

Test pressure, bar : 25...27

Prestroke mm : 2.80...2.90  
 : (2.75...2.95)

Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

## BASIC SETTING

1st speed rpm : 650

Rack travel in mm : 11.00...11.10

Del.quantity cm3/ : 16.7...16.9

100 s: (16.4...17.2)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 250.0

Rack travel in mm : 6.5...6.7

Del.quantity cm3/ : 1.4...2.0

100 s: (1.1...2.3)

Spread cm3 : 0.8

100 s: (1.2)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 700

Rack travel in mm : 15.20...16.40

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 650

Aneroid pressure h: 700

Del.quantity : 167.0...169.0

1000 : (164.0...172.0)

Spread cm3 : 5.00

1000 : (9.00)

## RATED SPEED

1st version

Setting point:

Speed rpm : 700

Rack travel in mm : 15.8

Testing:

1st rack travel in: 8.90

Speed rpm : 1130...1145

2nd rack travel in: 4.00

Speed rpm : 1180...1210

4th rack travel in: 1300

Speed rpm : 0.00...1.00

#### LOW IDLE 1

Setting point w/out bumper spring

Speed rpm : 250

Rack travel in mm : 6.3

#### Testing:

Speed rpm : 100

Minimum rack trave: 7.20

Speed rpm : 250

Rack travel in mm : 6.20...6.40

Rack travel in mm : 2.00

Speed rpm : 440...480

#### TORQUE CONTROL

Dimension a mm : 0.77

Torque control curve - 1st version

1st speed rpm : 650

Rack travel in m: 11.20...11.30

2nd speed rpm : 1090

Rack travel in m: 9.90...10.10

3rd speed rpm : 825

Rack travel in m: 10.70...10.90

4th speed rpm : 900

Rack travel in m: 10.30...10.60

Aneroid/Altitude

Compensator Test

#### 1st version

Setting

Speed rpm : 600

Rack travel in mm : 700

Contr.-rod trav.mm: 11.00...11.10

#### Measurement

Speed 1/min : 600

1st pressure hPa : -

Rack travel in m: 9.80...10.00

2nd pressure hPa : 290

Rack travel in m: 10.70...10.90

3rd pressure hPa : 260

Rack travel in m: 10.20...10.50

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: 700

Speed rpm : 1090

Del.quantity cm3/ : 153.0...157.0

1000 s: (150.0...160.0)

Aneroid pressure h: -

Speed rpm : 600

Del.quantity cm3/ : 135.0...137.0

1000 s: (132.0...140.0)

#### BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 8.90

Speed rpm : 1130...1145

#### STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/ : 320.0...360.0

1000 s: (320.0...360.0)

Rack travel in mm : 19.50...21.00

#### LOW IDLE

Speed rpm : 250

Rack travel in mm : 6.20...6.40

Remarks:

:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : VOL 10,0 s  
 Edition : 19.02.88  
 Replaces : 7.1.88  
 Test oil : ISO-4113  
 Combination no. : 0 401 846 529  
 Injection pump  
 Pump designation : PE6P120A32ORS3186  
 EP type number : 0 411 826 756  
 Governor  
 Governor design. : RQV250..1025PA657-13  
 Governor no. : 0 421 813 592

Customer-spec. information  
 Customer : VOLVO

Engine : TD102F

1st version kW : 220.0  
 Rated speed : 2050

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve  
 : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 1 688 901 019

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values -----

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.60...2.70  
 : (2.55...2.75)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 700  
 -----  
 Rack travel in mm : 11.40...11.50  
 -----  
 Del. quantity cm<sup>3</sup>/ : 19.7...19.9  
 -----  
 100 s : (19.4...20.2)  
 -----  
 Spread cm<sup>3</sup> : 0.5  
 -----  
 100 s : (0.9)  
 -----

2nd speed rpm : 250.0  
 Rack travel in mm : 3.9...4.1  
 Del. quantity cm<sup>3</sup>/ : 1.7...2.2  
 100 s : (1.4...2.4)  
 Spread cm<sup>3</sup> : 0.5  
 100 s : (0.7)

(B) Setting of injection pump  
 with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 250  
 travel mm : 1.20...1.30  
 2nd speed rpm : 430  
 travel mm : 3.50...3.80  
 3rd speed rpm : 700  
 travel mm : 6.40...6.60  
 4th speed rpm : 900  
 travel mm : 6.40...6.60  
 5th speed rpm : 1080  
 travel mm : 8.30...8.50

## GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -1  
 Speed rpm : 1080  
 Rack travel in mm : 15.20...17.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 700  
 Aneroid pressure h: 1000

Del.quantity : 197.0...199.0  
1000 : (194.0...202.0)  
Spread cm3 : 5.00  
1000 : (9.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 58...66

#### Testing:

1st rack travel in: 10.40  
Speed rpm : 1055...1065  
2nd rack travel in: 4.00  
Speed rpm : 1110...1140  
4th rack travel in: 1250  
Speed rpm : 0.00...1.00

#### LOW IDLE 1

Control lever  
position degrees: 61...69

#### Testing:

Speed rpm : 100  
Minimum rack travel: 5.40  
Speed rpm : 250  
Rack travel in mm : 3.90...4.10

#### CONSTANT REGULATION

Speed rpm : 250...350

Aneroid/Altitude  
Compensator Test

#### 1st version

##### Setting

Speed rpm : 500  
Rack travel in mm : 1000  
Contr.-rod trav.mm: 11.40...11.50

##### Measurement

Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 8.80...9.00  
2nd pressure hPa : 80  
Rack travel in m: 9.00...9.10  
3rd pressure hPa : 400  
Rack travel in m: 10.90...11.10

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: -  
Speed rpm : 700  
Del.quantity cm3/ : 143.0...145.0  
1000 s: (140.0...148.0)

#### BREAKAWAY

#### 1st version

1mm rack travel less than

full load rack tr: 10.40  
Speed rpm : 1055...1065

#### LOW IDLE

Speed rpm : 250  
Rack travel in mm : 3.90...4.10  
Del.quantity cm3/ : 17.0...22.0  
1000 s: (14.5...24.5)  
Spread cm3 : 5.00  
1000 s: (7.00)

Remarks:

:

Delivery-valve spring pre-tension =  
2.40...2.60 mm.  
Permissible alteration from 2.20...2.90  
mm

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : ENA 10.1 c  
Edition : 12.02.88  
Replaces : 22.1.88  
Test oil : ISO-4113

Combination no. : 0 401 846 547

Injection pump  
Pump designation : PE6P110A820LS513  
EP type number : 0 411 816 174  
Governor  
Governor design. : RQV250...1000PA811  
Governor no. : 0 421 813 556

Customer-spec. information  
Customer : ENASA

Engine : 95 R1 AX

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
x Wall thickness  
x Length mm : 6.00X1.50X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values -----

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.20...3.30  
: (3.15...3.25)

Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

## BASIC SETTING

1st speed rpm : 900

Rack travel in mm : 12.80...12.90

Del. quantity cm<sup>3</sup>/ : 17.6...17.8

100 s: (17.3...18.1)

Spread cm<sup>3</sup> : 0.4

100 s: (0.7)

2nd speed rpm : 250.0

Rack travel in mm : 6.6...6.8

Del. quantity cm<sup>3</sup>/ : 1.8...2.3

100 s: (1.5...2.5)

Spread cm<sup>3</sup> : 0.4

100 s: (0.7)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 250

travel mm : 1.00...1.40

2nd speed rpm : 400

travel mm : 2.20...2.80

3rd speed rpm : 650

travel mm : 4.50...5.10

4th speed rpm : 1050

travel mm : 8.50...8.70

5th speed rpm : 1140

travel mm : 9.70...10.10

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1040

Rack travel in mm : 15.20...17.80

## FULL LOAD DELIV. AT FULL LOAD STOP

### 1st version

Speed rpm : 900

Aneroid pressure h: 900

Del. quantity : 176.0...178.0

1000 : (173.0...181.0)

Spread cm<sup>3</sup> : 4.00

1000 : (7.50)

## RATED SPEED

### 1st version

Control lever  
position degrees: 41...49

Testing:

1st rack travel in: 11.80  
Speed rpm : 1040...1050  
2nd rack travel in: 4.00  
Speed rpm : 1130...1160  
4th rack travel in: 1250  
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever  
position degrees: 9...17

Testing:

Speed rpm : 100  
Minimum rack travel: 8.20  
Speed rpm : 250  
Rack travel in mm : 6.60...6.80

CONSTANT REGULATION

Speed rpm : 250...380

TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 900  
Rack travel in m: 12.80...12.90  
2nd speed rpm : 600  
Rack travel in m: 13.10...13.30

Aneroid/Altitude  
Compensator Test

1st version

Setting

Speed rpm : 500  
Rack travel in mm : 900  
Contr.-rod trav.mm: 13.10...13.30

Measurement

Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 10.90...11.20  
2nd pressure hPa : 440  
Rack travel in m: 12.50...12.60  
3rd pressure hPa : 290  
Rack travel in m: 11.50...11.70

START CUT-OUT

Speed 1/min : 170 (150)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 900

Speed rpm : 600  
Del.quantity cm3/ : 178.0...182.0  
1000 s: (175.0...185.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 131.0...135.0  
1000 s: (128.0...138.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.80  
Speed rpm : 1040...1050

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 150.0...170.0  
1000 s: (146.0...174.0)

Remarks:

:

APPLICATION

Special-purpose vehicle

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : ENA 10.1 d  
Edition : 12.02.88  
Replaces : -  
Test oil : ISO-4113  
  
Combination no. : 0 401 846 549  
  
Injection pump  
Pump designation : PE6P100AB20LS503  
EP type number : 0 411 806 197  
Governor  
Governor design. : RQV250...1000PA811  
Governor no. : 0 421 813 556

Customer-spec. information  
Customer : ENASA

Engine : 95 T1 AX,BX

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42  
  
Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
x Wall thickness  
x Length mm : 6.00X1.50X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values -----

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.80...2.90  
: (2.75...2.95)

Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

## BASIC SETTING

1st speed rpm : 980

Rack travel in mm : 14.20...14.30

Del. quantity cm<sup>3</sup>/ : 16.5...16.7

100 s: (16.3...16.9)

Spread cm<sup>3</sup> : 0.3

100 s: (0.6)

2nd speed rpm : 250.0

Rack travel in mm : 7.7...7.9

Del. quantity cm<sup>3</sup>/ : 1.8...2.2

100 s: (1.5...2.4)

Spread cm<sup>3</sup> : 0.3

100 s: (0.5)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1040

Rack travel in mm : 15.20...17.80

## FULL LOAD DELIV. AT FULL LOAD STOP

### 1st version

Speed rpm : 980

Aneroid pressure h: 900

Del. quantity : 165.0...167.0

1000 : (163.0...169.0)

Spread cm<sup>3</sup> : 3.50

1000 : (6.00)

## RATED SPEED

### 1st version

Control lever

position degrees: 42...50

### Testing:

1st rack travel in: 13.20

Speed rpm : 1040...1050

2nd rack travel in: 4.00

Speed rpm : 1140...1170

4th rack travel in: 1250

Speed rpm : 0.00...1.00

## LOW IDLE 1

Control lever

position degrees: 9...17



### Testing:

Speed rpm : 100  
Minimum rack travel: 7.50  
Speed rpm : 250  
Rack travel in mm : 5.90...6.10

### CONSTANT REGULATION

Speed rpm : 250...350

### TORQUE CONTROL

Dimension a mm : 0.30  
Torque control curve - 1st version  
1st speed rpm : 980  
Rack travel in m: 14.20...14.30  
2nd speed rpm : 700  
Rack travel in m: 14.50...14.70  
3rd speed rpm : 850  
Rack travel in m: 14.30...14.50

### Aneroid/Altitude Compensator Test

#### 1st version

##### Setting

Speed rpm : 500  
Rack travel in mm : 900  
Contr.-rod trav.mm: 14.50...14.70

##### Measurement

Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 13.00...13.30  
2nd pressure hPa : 400  
Rack travel in m: 14.10...14.20  
3rd pressure hPa : 300  
Rack travel in m: 13.40...13.60

### START CUT-OUT

Speed 1/min : 170 (190)

### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: 900  
Speed rpm : 700  
Del.quantity cm<sup>3</sup>/ : 163.5...167.5  
1000 s: (161.5...169.5)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm<sup>3</sup>/ : 129.0...133.0  
1000 s: (127.0...135.0)

### BREAKAWAY

#### 1st version

J24

1mm rack travel less than

full load rack tr: 13.20  
Speed rpm : 1040...1050

### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 180.0...200.0  
1000 s: (176.0...204.0)

Remarks:

:

### APPLICATION

Special-purpose vehicle

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : ENA 11,9 f  
Edition : 12.02.88  
Replaces : -  
Test oil : ISO-4113

Combination no. : 0 401 846 551

Injection pump  
Pump designation : PE6P110A32ORS263-1  
EP type number : 0 411 816 175  
Governor  
Governor design. : RQ250/1000PA218-2  
Governor no. : 0 421 801 411

Customer-spec. information  
Customer : ENASA

Engine : 96 T4 AY

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
x Wall thickness  
x Length mm : 6.00X1.50X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values -----

## BEGINNING OF DELIVERY

Test pressure, bar : 25...27

Prestroke mm : 2.80...2.90  
: (2.75...2.95)

Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 900

Rack travel in mm : 11.40...11.50

Del. quantity cm<sup>3</sup>/ : 16.0...16.2

100 s : (15.7...16.5)

Spread cm<sup>3</sup> : 0.4

100 s : (0.7)

2nd speed rpm : 250.0

Rack travel in mm : 5.9...6.1

Del. quantity cm<sup>3</sup>/ : 1.7...2.3

100 s : (1.4...2.6)

Spread cm<sup>3</sup> : 0.4

100 s : (0.7)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 600

Rack travel in mm : 15.60...16.40

## FULL LOAD DELIV. AT FULL LOAD STOP

### 1st version

Speed rpm : 900

Del. quantity : 160.0...162.0

1000 : (157.0...165.0)

Spread cm<sup>3</sup> : 4.00

1000 : (7.50)

## RATED SPEED

### 1st version

Setting point:

Speed rpm : 600

Rack travel in mm : 16.0

## Testing:

1st rack travel in: 10.40

Speed rpm : 1045...1060

2nd rack travel in: 4.00

Speed rpm : 1110...1140

4th rack travel in: 1200

Speed rpm : 0.00...1.00

## LOW IDLE 1

Setting point w/out bumper spring  
Speed rpm : 250  
Rack travel in mm : 6.0

Testing:

Speed rpm : 100  
Minimum rack trave: 7.50  
Speed rpm : 250  
Rack travel in mm : 5.90...6.10  
Rack travel in mm : 2.00  
Speed rpm : 350...390

BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 10.40  
Speed rpm : 1045...1060

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 143.0...163.0  
1000 s: (139.0...167.0)

Remarks:

:

APPLICATION

Special-purpose vehicle

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : ENA 10,1 e  
 Edition : 11.03.88  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 401 846 552  
 Injection pump  
 Pump designation : PE6P100A82OLS503-1  
 EP type number : 0 411 806 198  
 Governor  
 Governor design. : RQ250/1000PA352-1  
 Governor no. : 0 421 801 412

Customer-spec. information  
 Customer : ENASA

Engine : 95 T1 AZ,CZ

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve  
 : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values -----

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.80...2.90  
 : (2.85...2.95)

Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

## BASIC SETTING

1st speed rpm : 980

Rack travel in mm : 14.20...14.30

Del. quantity cm<sup>3</sup>/ : 16.5...16.7

100 s: (16.3...16.9)

Spread cm<sup>3</sup> : 0.3

100 s: (0.6)

2nd speed rpm : 250.0

Rack travel in mm : 7.8...8.0

Del. quantity cm<sup>3</sup>/ : 1.8...2.2

100 s: (1.5...2.4)

Spread cm<sup>3</sup> : 0.3

100 s: (0.5)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 600

Rack travel in mm : 15.60...16.40

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 980

Aneroid pressure h: 900

Del. quantity : 165.0...167.0

1000 : (163.0...169.0)

Spread cm<sup>3</sup> : 3.50

1000 : (6.00)

## RATED SPEED

1st version

Setting point:

Speed rpm : 600

Rack travel in mm : 16.0

Testing:

1st rack travel in: 13.20

Speed rpm : 1045...1060

2nd rack travel in: 4.00

Speed rpm : 1100...1130

4th rack travel in: 1200

Speed rpm : 0.00...1.00

## LOW IDLE 1

Setting point w/out bumper spring

Speed rpm : 250  
Rack travel in mm : 6.0

Testing:

Speed rpm : 100  
Minimum rack travel : 7.50  
Speed rpm : 250  
Rack travel in mm : 5.90...6.10  
Rack travel in mm : 2.00  
Speed rpm : 350...390

TORQUE CONTROL

Dimension a mm : ?  
Torque control curve - 1st version  
1st speed rpm : 1000  
Rack travel in mm : 14.20...14.30  
2nd speed rpm : 700  
Rack travel in mm : 14.60...14.90

Aneroid/Altitude  
Compensator Test

1st version

Setting

Speed rpm : 500  
Rack travel in mm : 900  
Contr.-rod trav.mm: 14.60...14.90

Measurement

Speed 1/min : 500

1st pressure hPa : -  
Rack travel in mm: 13.00...13.30  
2nd pressure hPa : 400  
Rack travel in mm: 14.10...14.20  
3rd pressure hPa : 300  
Rack travel in mm: 13.40...13.60

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 900  
Speed rpm : 700  
Del.quantity cm3/ : 169.0...172.0  
1000 s: (166.5...174.5)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 129.0...133.0  
1000 s: (127.0...135.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 13.20  
Speed rpm : 1045...1060

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 250.0...265.0  
1000 s: (246.0...269.0)  
Rack travel in mm : 19.50...21.00

Remarks:

:

APPLICATION

Special-purpose vehicle

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB 11,0 c 1  
Edition : 19.02.88  
Replaces : 22.10.86  
Test oil : ISC-4113

Combination no. : 0 401 846 749

Injection pump  
Pump designation : PE6P110A32QLS3805-10  
EP type number : 0 411 816 740  
Governor  
Governor design. : RQ300/1150PA187-6  
Governor no. : 0 421 801 155

Customer-spec. information  
Customer : DAIMLER-BENZ

Engine : OM421

1st version kW : 159.0  
Rated speed : 2300  
2nd version kW : 159.0  
Rated speed : 2300

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
quantity min. 1/h: 100...120

Test nozzle holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
x Wall thickness  
x Length mm : 6.00X1.50X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values -----

## BEGINNING OF DELIVERY

K01

Test pressure, bar: 25...27

Prestroke mm : 4.00...4.10  
: (3.95...4.15)  
Rack travel in mm : 9.00...12.00  
Firing order : 6- 3- 5- 2- 4- 1

Phasing : 0-45-120-165-240-285  
Phasing :  
Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

## BASIC SETTING

1st speed rpm : 1150  
-----  
Rack travel in mm : 11.70...11.80  
-----  
Del. quantity cm3/ : 13.3...13.5  
-----  
100 s: (13.0...13.7)  
-----

Spread cm3 : 0.4  
-----  
100 s: (0.8)  
-----

2nd speed rpm : 300.0  
Rack travel in mm : 7.8...8.0  
Del. quantity cm3/ : 1.2...1.8  
100 s: (0.9...2.0)  
Spread cm3 : 0.4  
100 s: (0.7)

1st speed rpm : 1150  
Rack travel in mm : 12.5...12.6  
Del. quantity cm3/ : 12.8...13.0\*  
100 s: (12.5...13.3  
Spread cm3 : 0.4  
100 s: (0.8)

2nd speed rpm : 300  
Rack travel in mm : 8.30...8.50  
Del. quantity cm3/ : 1.2...1.8 \*  
100 s: (-)  
Spread cm3 : 0.4  
100 s: (0.7)

## GUIDE SLEEVE POSITION

Control-lever position  
Degree: -1  
Speed rpm : 650  
Rack travel in mm : 13.20...14.00

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
Speed rpm : 1150

Del.quantity : 133.0...135.0  
1000 : (130.5...137.5)  
Spread cm3 : 4.00  
1000 : (8.00)  
2nd version  
Speed rpm : 1150  
Del.quantity cm3/ : 128.0...130.0  
1000 s: (125.0...133.0)  
Spread cm3 : 4.0  
1000 s: (8.0)

#### RATED SPEED

##### 1st version

Setting point:  
Speed rpm : 650  
Rack travel in mm : 13.6

Testing:  
1st rack travel in: 10.70  
Speed rpm : 1195...1210  
2nd rack travel in: 4.00  
Speed rpm : 1240...1270  
4th rack travel in: 1350  
Speed rpm : 0.00...1.50

##### 2nd version

Setting point:  
Speed rpm : 650  
Rack travel in mm : 13.6

Testing:  
1st rack travel in: 10.70  
Speed rpm : 1195...1210  
2nd rack travel in: 4.00  
Speed rpm : 1240...1270  
4th rack travel in: 1350  
Speed rpm : 0.00...1.50

#### LOW IDLE 1

Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 7.9

Testing:  
Speed rpm : 100  
Minimum rack travel: 9.50  
Speed rpm : 300  
Rack travel in mm : 7.80...8.00  
Rack travel in mm : 2.00  
Speed rpm : 410...440

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Speed rpm : 600

Del.quantity cm3/ : 112.0...116.0  
1000 s: (109.0...119.0)  
Spread cm3 : 6.00  
1000 s: (9.0)  
2nd version  
Speed rpm : 600  
Del.quantity cm3/ : 120.0...124.0  
1000 s: (117.0...127.0)  
Spread cm3 : 6.0  
1000 s: (9.0)

#### BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 10.70  
Speed rpm : 1195...1210

2nd version  
1mm rack travel less than  
full load rack tr: 11.50  
Speed rpm : 1195...1210

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 130.0...150.0  
1000 s: (126.0...154.0)

Remarks:  
See VDT-I-401/102.  
Version 1: Without return-flow  
restriction  
Version 2: With return-flow restriction  
\* Version 2

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : VOL 10,0 Q3  
 Edition : 22.01.88  
 Replaces : 5.85  
 Test oil : ISO-4113  
 Combination no. : 0 401 846 781  
 Injection pump  
 Pump designation : PE6P110A32ORS3108  
 EP type number : 0 411 816 727  
 Governor  
 Governor design. : RQV325...1100PA232-1  
 Governor no. : 0 421 813 409

Customer-spec. information  
 Customer : VOLVO-BM

Engine : EM/TD100G

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42  
 Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values -----

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.00...3.10  
 : (2.95...3.15)

Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 11.50...11.60

Del. quantity cm3/ : 14.7...14.9

100 s: (14.4...15.2)

Spread cm3 : 0.4

100 s: (0.8)

2nd speed rpm : 325.0

Rack travel in mm : 4.0...4.2

Del. quantity cm3/ : 1.7...2.1

100 s: (1.4...2.3)

Spread cm3 : 0.3

100 s: (0.6)

(B) Setting of injection pump  
 with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 325

travel mm : 1.50...1.90

2nd speed rpm : 450

travel mm : 2.40...3.00

3rd speed rpm : 700

travel mm : 4.30...4.90

4th speed rpm : 1160

travel mm : 8.60...8.80

5th speed rpm : 1240

travel mm : 9.50...9.90

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1160

Rack travel in mm : 15.20...17.80

## FULL LOAD DELIV. AT FULL LOAD STOP

### 1st version

Speed rpm : 700

Aneroid pressure h: 900

Del. quantity : 147.0...149.0

1000 : (144.0...152.0)

Spread cm3 : 4.00

1000 : (8.00)

## RATED SPEED



1st version  
Control lever  
position degrees: 42...50

Testing:  
1st rack travel in: 10.50  
Speed rpm : 1160...1170  
2nd rack travel in: 4.00  
Speed rpm : 1230...1260  
4th rack travel in: 1350  
Speed rpm : 0.00...1.00

LOW IDLE 1  
Control lever  
position degrees: 9...17

Testing:  
Speed rpm : 100  
Minimum rack travel: 5.60  
Speed rpm : 325  
Rack travel in mm : 4.00...4.20

CONSTANT REGULATION  
Speed rpm : 325...425

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 500  
Rack travel in mm : 900  
Contr.-rod trav.mm: 11.50...11.60

Measurement  
Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 9.60...9.80  
2nd pressure hPa : 290  
Rack travel in m: 9.90...10.00  
3rd pressure hPa : 510  
Rack travel in m: 11.30...11.40

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: 900  
Speed rpm : 1000  
Del.quantity cm3/ : 138.0...142.0  
1000 s: (135.0...145.0)  
Aneroid pressure h: -  
Speed rpm : 700  
Del.quantity cm3/ : 106.5...109.5  
1000 s: (104.0...112.0)

#### BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 10.50  
Speed rpm : 1160...1170

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 170.0...200.0  
1000 s: (166.0...204.0)  
Rack travel in mm : 20.00...21.00

#### LOW IDLE

Speed rpm : 325  
Rack travel in mm : 4.00...4.20  
Del.quantity cm3/ : 17.0...21.0  
1000 s: (14.5...23.5)  
Spread cm3 : 3.00  
1000 s: (6.00)

Remarks:

:

Delivery-valve spring pre-tension =  
2.40...2.60 mm.  
Permissible alteration from 2.20...2.90  
mm

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : SCA 9,0 E 2  
 Edition : 02.11.87  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 401 846 803  
 Injection pump  
 Pump designation : PE6P120A320RS3141  
 EP type number : 0 411 826 744  
 Governor  
 Governor design. : RQV200...1100PA729  
 Governor no. : 0 421 813 469

Customer-spec. information  
 Customer : SAAB-SCANIA

Engine : DN 901

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42  
 Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 1 688 901 019

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test lines : 1 680 750 015

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values -----

## BEGINNING OF DELIVERY

Test pressure, bar : 25...27

Prestroke mm : 5.00...5.10  
 : (4.95...5.15)

Rack travel in mm : 9.00...12.00

K05

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 9.30...9.40

Del. quantity cm<sup>3</sup>/ : 11.7...11.9

100 s : (11.4...12.2)

Spread cm<sup>3</sup> : 0.5

100 s : (0.8)

2nd speed rpm : 225.0

Rack travel in mm : 5.4...5.6

Del. quantity cm<sup>3</sup>/ : 1.5...1.9

Spread cm<sup>3</sup> : 0.3

100 s : (0.6)

(B) Setting of injection pump  
 with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 225  
 travel mm : 0.90...1.00

2nd speed rpm : 350  
 travel mm : 2.60...2.90

3rd speed rpm : 550  
 travel mm : 4.90...5.20

4th speed rpm : 1140  
 travel mm : 8.60...8.80

5th speed rpm : 1230  
 travel mm : 9.20...9.40

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1120

Rack travel in mm : 15.20...17.80

## FULL LOAD DELIV. AT FULL LOAD STOP

### 1st version

Speed rpm : 700

Del. quantity : 117.0...119.0

1000 : (114.0...122.0)

Spread cm<sup>3</sup> : 5.00

1000 : (8.00)

## RATED SPEED

1st version  
Control lever  
position degrees: 56...64

Testing:  
1st rack travel in: 8.30  
Speed rpm : 1140...1150  
2nd rack travel in: 4.00  
Speed rpm : 1210...1240  
4th rack travel in: 1350  
Speed rpm : 0.00...1.00

LOW IDLE 1  
Control lever  
position degrees: 5...13

Testing:  
Speed rpm : 100  
Minimum rack travel: 6.20  
Speed rpm : 225  
Rack travel in mm : 4.70...4.90  
Rack travel in mm : 2.00  
Speed rpm : 300...360

## FUEL DELIVERY CHARACTERISTICS

1st version  
Speed rpm : 1100  
Del. quantity cm<sup>3</sup>/ : 124.0...132.0  
1000 s: (122.0...134.0)

## BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 8.30  
Speed rpm : 1140...1150

## STARTING FUEL DELIVERY

Speed rpm : 100  
Del. quantity cm<sup>3</sup>/ : 290.0...340.0  
Rack travel in mm : 20.00...21.00

## LOW IDLE

Speed rpm : 225  
Rack travel in mm : 4.70...4.90

Remarks:

Delivery-valve spring pre-tension  
3.2...3.4 mm.

K06

Permissible alteration of 3.0...3.5 mm  
ADDITIONAL INFORMATION

Check and set without ROBO diaphragm

For comb. with letter index see  
VDT-I-400/116.

For sealing see VDT-I-400/117.

Test specifications approved by Scania  
1987-01-08  
Engine start of delivery: 18° BTDC

Firing sequence of engine:  
1-5-3-6-2-4.

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : VOL 12,2 A  
 Edition : 07.01.88  
 Replaces : 20.11.87  
 Test oil : ISO-4113

Combination no. : 0 401 846 827

Injection pump  
 Pump designation : PE6P120A32ORS3178  
 EP type number : 0 411 826 752  
 Governor  
 Governor design. : RQV250...950PA657-11  
 Governor no. : 0 421 813 568

Customer-spec. information  
 Customer : VOLVO

Engine : TD122F

1st version kW : 257.0  
 Rated speed : 1900

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 1 688 901 019

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values -----

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.60...3.70  
 : (3.55...3.75)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 13.00...13.10

Del. quantity cm3/ : 22.9...23.1

100 s: (22.6...23.4)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 250.0

Rack travel in mm : 4.6...4.8

Del. quantity cm3/ : 1.7...2.2

100 s: (1.4...2.5)

Spread cm3 : 0.5

100 s: (0.7)

(B) Setting of injection pump  
 with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 250  
 travel mm : 1.00...1.40

2nd speed rpm : 450  
 travel mm : 3.60...4.20

3rd speed rpm : 700  
 travel mm : 6.40...6.60

4th speed rpm : 985  
 travel mm : 8.20...8.40

5th speed rpm : 1060  
 travel mm : 9.60...10.00

## GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -1

Speed rpm : 1000

Rack travel in mm : 15.20...17.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700

Aneroid pressure h: 900

Del.quantity : 229.0...231.0  
1000 : (226.0...234.0)  
Spread cm3 : 5.00  
1000 : (9.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 60...68

Testing:  
1st rack travel in: 12.00  
Speed rpm : 980...990  
2nd rack travel in: 4.00  
Speed rpm : 1060...1090  
4th rack travel in: 1200  
Speed rpm : 0.00...1.00

#### LOW IDLE 1

Control lever  
position degrees: 5...13

Testing:  
Speed rpm : 100  
Minimum rack travel: 6.20  
Speed rpm : 250  
Rack travel in mm : 4.60...4.80

#### CONSTANT REGULATION

Speed rpm : 250...380

Aneroid/Altitude  
Compensator Test

#### 1st version

Setting  
Speed rpm : 500  
Rack travel in mm : 900  
Contr.-rod trav.mm: 13.00...13.10

#### Measurement

Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 9.80...10.00  
2nd pressure hPa : 100  
Rack travel in m: 10.20...10.30  
3rd pressure hPa : 640  
Rack travel in m: 12.70...12.90

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: -  
Speed rpm : 700  
Del.quantity cm3/ : 163.0...165.0  
1000 s: (160.0...168.0)

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 12.00  
Speed rpm : 980...990

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 220.0...260.0  
1000 s: (216.0...264.0)  
Rack travel in mm : 20.00...21.00

#### LOW IDLE

Speed rpm : 250  
Rack travel in mm : 4.60...4.80  
Del.quantity cm3/ : 17.5...22.5  
1000 s: (14.5...25.5)  
Spread cm3 : 5.00  
1000 s: (7.00)

Remarks:

:

Delivery-valve spring pre-tension =  
2.40...2.60 mm.  
Permissible alteration from 2.20...2.90  
mm

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB 11,0 S 2  
Edition : 15.01.88  
Replaces : 16.10.87  
Test oil : ISO-4113

Combination no. : 0 401 846 829

Injection pump  
Pump designation : PE6P110A320LS3835  
EP type number : 0 411 816 749  
Governor  
Governor design. : RQ300/950PA827-1K  
Governor no. : 0 421 803 093

Customer-spec. information  
Customer : DAIMLER-BENZ

Engine : OM441

1st version kW : 150.0  
Rated speed : 1900

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
quantity min. 1/h: 100...120

Test nozzle holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
x Wall thickness  
x Length mm : 6.00X1.50X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values -----

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.00...4.10  
                  : (3.95...4.15)  
Rack travel in mm : 9.00...12.00  
Firing order : 6- 3- 5- 2- 4- 1

Phasing : 0-45-120-165-240-285

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

## BASIC SETTING

1st speed rpm : 950

Rack travel in mm : 13.10...13.20

Del. quantity cm3/ : 12.6...12.8

100 s: (12.3...13.0)

Spread cm3 : 0.4

100 s: (0.8)

2nd speed rpm : 300.0

Rack travel in mm : 8.8...9.0

Del. quantity cm3/ : 1.5...2.1

100 s: (1.2...2.3)

Spread cm3 : 0.4

100 s: (0.7)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 300  
travel mm : 1.60...1.80

2nd speed rpm : 500  
travel mm : 5.50...5.70

3rd speed rpm : 775  
travel mm : 6.50...6.80

4th speed rpm : 950  
travel mm : 7.50...7.80

5th speed rpm : 1100  
travel mm : 9.50...10.00

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 600

Rack travel in mm : 14.70...15.70

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 950

Del.quantity : 126.0...128.0  
1000 : (123.5...130.5)  
Spread cm3 : 4.00  
1000 : (8.00)

#### RATED SPEED

1st version

#### Setting point:

Speed rpm : 600  
Rack travel in mm : 15.2

#### Testing:

1st rack travel in: 12.10  
Speed rpm : 995...1010  
2nd rack travel in: 4.00  
Speed rpm : 1050...1080  
4th rack travel in: 1300  
Speed rpm : 0.00...1.50

#### LOW IDLE 1

Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 8.8

#### Testing:

Speed rpm : 200  
Minimum rack trave: 10.50  
Speed rpm : 300  
Rack travel in mm : 8.80...8.90  
Rack travel in mm : 2.00  
Speed rpm : 450...490  
Speed rpm : 550  
Maximum rack trave: 1.80

#### TORQUE CONTROL

Dimension a mm : 2.00

#### FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 600  
Del.quantity cm3/ : 117.0...120.0  
1000 s: (114.0...123.0)  
Spread cm3 : 6.00  
1000 s: (9.00)  
Speed rpm : 750  
Del.quantity cm3/ : 120.0...124.0  
1000 s: (117.0...127.0)  
Spread cm3 : 6.00  
1000 s: (9.00)

#### BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 12.10  
Speed rpm : 995...1010

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 120.0...140.0  
1000 s: (116.0...144.0)

Remarks:

:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : VOL 10,0 s2  
 Edition : 07.03.88  
 Replaces : 12.11.87  
 Test oil : ISO-4113  
 Combination no. : 0 401 846 836  
 Injection pump  
 Pump designation : PE6P120A32ORS3186-1  
 EP type number : 0 411 826 774  
 Governor  
 Governor design. : RQV250..1100PA657-14  
 Governor no. : 0 421 813 682

Customer-spec. information  
 Customer : VOLVO

Engine : TD102FDQ

1st version kW : 232.0  
 Rated speed : 2200

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve  
 : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 1 688 901 019

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values -----

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.60...2.70  
 : (2.55...2.75)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 11.40...11.50

Del. quantity cm3/ : 19.7...19.9

100 s: (19.4...20.2)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 250.0

Rack travel in mm : 4.2...4.4

Del. quantity cm3/ : 1.7...2.2

100 s: (1.4...2.4)

Spread cm3 : 0.5

100 s: (0.7)

(B) Setting of injection pump  
 with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 250

travel mm : 1.00...1.40

2nd speed rpm : 350

travel mm : 2.20...2.80

3rd speed rpm : 700

travel mm : 6.40...6.60

4th speed rpm : 1135

travel mm : 7.70...7.90

5th speed rpm : 1210

travel mm : 8.90...9.30

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1170

Rack travel in mm : 15.20...17.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700

Aneroid pressure h: 1000



Del.quantity : 197.0...199.0  
1000 : (194.0...202.0)  
Spread cm<sup>3</sup> : 5.00  
1000 : (9.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 56...64

#### Testing:

1st rack travel in: 10.40  
Speed rpm : 1130...1140  
2nd rack travel in: 4.00  
Speed rpm : 1195...1225  
4th rack travel in: 1350  
Speed rpm : 0.00...1.00

#### LOW IDLE 1

Control lever  
position degrees: 4...12

#### Testing:

Speed rpm : 100  
Minimum rack travel: 5.70  
Speed rpm : 250  
Rack travel in mm : 4.20...4.40

#### CONSTANT REGULATION

Speed rpm : 250...360

Aneroid/Altitude  
Compensator Test

#### 1st version

Setting  
Speed rpm : 500  
Rack travel in mm : 1000  
Contr.-rod trav.mm: 11.40...11.50

#### Measurement

Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 8.70...8.90  
2nd pressure hPa : 80  
Rack travel in m: 9.00...9.10  
3rd pressure hPa : 400  
Rack travel in m: 11.00...11.20

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: -  
Speed rpm : 700  
Del.quantity cm<sup>3</sup>/ : 143.0...145.0  
1000 s: (140.0...148.0)

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 10.40  
Speed rpm : 1130...1140

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 260.0...310.0  
1000 s: (256.0...314.0)  
Rack travel in mm : 20.00...21.00

#### LOW IDLE

Speed rpm : 250  
Rack travel in mm : 4.20...4.40  
Del.quantity cm<sup>3</sup>/ : 17.0...22.0  
1000 s: (14.5...24.5)  
Spread cm<sup>3</sup> : 5.00  
1000 s: (7.00)

Remarks:

:

Delivery-valve spring pre-tension =  
2.40...2.60 mm.  
Permissible alteration from 2.20...2.90  
mm

Note remarks

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values

**K13**

1000 : (144.0...152.0)

Spread cm3 : 4.00  
1000 : (7.50)

#### RATED SPEED

1st version  
Control lever  
position degrees: 43...51

Testing:  
1st rack travel in: 9.80  
Speed rpm : 1160...1170  
2nd rack travel in: 4.00  
Speed rpm : 1230...1260  
4th rack travel in: 1350  
Speed rpm : 0.00...1.00

LOW IDLE 1  
Control lever  
position degrees: 9...17

Testing:  
Speed rpm : 100  
Minimum rack travel: 5.50  
Speed rpm : 300  
Rack travel in mm : 3.90...4.10

CONSTANT REGULATION  
Speed rpm : 300...400

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 500  
Rack travel in mm : 900  
Contr.-rod trav.mm: 10.80...10.90

Measurement  
Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 9.40...9.60  
2nd pressure hPa : 280  
Rack travel in m: 10.60...10.70  
3rd pressure hPa : 180  
Rack travel in m: 9.80...10.00

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: 900  
Speed rpm : 1000  
Del.quantity cm3/ : 130.5...134.5  
1000 s: (127.5...135.5)  
Aneroid pressure h: -  
Speed rpm : 700

Del.quantity cm3/ : 118.5...121.5  
1000 s: (116.0...124.0)

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 9.80  
Speed rpm : 1160...1170

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 150.0...170.0  
1000 s: (146.0...174.0)

#### LOW IDLE

Speed rpm : 300  
Rack travel in mm : 3.90...4.10  
Del.quantity cm3/ : 16.0...20.0  
1000 s: (13.5...22.5)  
Spread cm3 : 3.00  
1000 s: (6.00)

Remarks:

APPLICATION  
Loading machine

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : VOL 10,0 V1  
 Edition : 11.12.87  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 401 846 856  
 Injection pump  
 Pump designation : PE6P110A320RS3080-2  
 EP type number : 0 411 816 750  
 Governor  
 Governor design. : RQV250...1050PA657-15  
 Governor no. : 0 421 813 652

Customer-spec. information  
 Customer : VOLVO

Engine : TD102FEQ

1st version kW : 191.0  
 Rated speed : 2100

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve  
 : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values -----

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.00...3.10  
 : (2.95...3.15)

Rack travel in mm : 9.00...12.00  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 700  
 Rack travel in mm : 12.50...12.60  
 Del. quantity cm<sup>3</sup>/ : 16.2...16.4  
 100 s: (15.9...16.7)  
 Spread cm<sup>3</sup> : 0.4  
 100 s: (0.7)

2nd speed rpm : 250.0  
 Rack travel in mm : 3.8...4.0  
 Del. quantity cm<sup>3</sup>/ : 1.5...1.9  
 100 s: (1.2...2.1)  
 Spread cm<sup>3</sup> : 0.3  
 100 s: (0.6)

(B) Setting of injection pump  
 with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 250  
 travel mm : 1.00...1.40  
 2nd speed rpm : 350  
 travel mm : 2.20...2.80  
 3rd speed rpm : 750  
 travel mm : 6.30...6.70  
 4th speed rpm : 1085  
 travel mm : 7.80...8.00  
 5th speed rpm : 1160  
 travel mm : 9.00...9.40

## GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -1  
 Speed rpm : 1120  
 Rack travel in mm : 15.20...17.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 700  
 Aneroid pressure h: 900  
 Del. quantity : 162.0...164.0  
 1000 : (159.0...167.0)

Spread        cm<sup>3</sup> : 4.00  
              1000 : (7.50)

#### RATED SPEED

1st version  
Control lever  
position degrees: 58...66

Testing:  
1st rack travel in: 11.50  
Speed        rpm : 1080...1090  
2nd rack travel in: 4.00  
Speed        rpm : 1140...1170  
4th rack travel in: 1300  
Speed        rpm : 0.00...1.00

LOW IDLE 1  
Control lever  
position degrees: 4...12

Testing:  
Speed        rpm : 100  
Minimum rack travel: 5.30  
Speed        rpm : 250  
Rack travel in mm : 3.80...4.00

CONSTANT REGULATION  
Speed        rpm : 250...360

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed        rpm : 500  
Rack travel in mm : 900  
Contr.-rod trav.mm: 12.50...12.60

Measurement  
Speed        1/min : 500

1st pressure hPa : -  
Rack travel in m: 10.80...11.00  
2nd pressure hPa : 110  
Rack travel in m: 11.10...11.20  
3rd pressure hPa : 320  
Rack travel in m: 12.20...12.40

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: -  
Speed        rpm : 700  
Del.quantity cm<sup>3</sup>/ : 132.0...135.0  
              1000 s: (129.5...137.5)

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 11.50  
Speed        rpm : 1080...1090

#### STARTING FUEL DELIVERY

Speed        rpm : 100  
Del.quantity cm<sup>3</sup>/ : 160.0...190.0  
              1000 s: (156.0...194.0)  
Rack travel in mm : 20.00...21.00

#### LOW IDLE

Speed        rpm : 250  
Rack travel in mm : 3.80...4.00  
Del.quantity cm<sup>3</sup>/ : 15.0...19.0  
              1000 s: (12.5...21.5)  
Spread        cm<sup>3</sup> : 3.00  
              1000 s: (6.00)

Remarks:

:

Delivery-valve spring pre-tension =  
2.40...2.60 mm.  
Permissible alteration from 2.20...2.90  
mm

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : VOL 10,0 V2  
 Edition : 11.12.87  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 401 846 857  
 Injection pump  
 Pump designation : PE6P110A320RS3080-1  
 EP type number : 0 411 816 734  
 Governor  
 Governor design. : RQV250....950PA657-16  
 Governor no. : 0 421 813 655

Customer-spec. information  
 Customer : VOLVO

Engine : TD102FBQ

1st version kW : 228.0  
 Rated speed : 1900

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve  
 : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values -----

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.00...3.10  
 : (2.95...3.15)

Rack travel in mm : 9.00...12.00  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 14.30...14.40

Del. quantity cm3/ : 19.9...20.1

100 s: (19.6...20.4)

Spread cm3 : 0.4

100 s: (0.7)

2nd speed rpm : 250.0

Rack travel in mm : 3.8...4.0

Del. quantity cm3/ : 1.5...1.9

100 s: (1.2...2.1)

Spread cm3 : 0.3

100 s: (0.6)

(B) Setting of injection pump  
 with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 250

travel mm : 1.00...1.40

2nd speed rpm : 350

travel mm : 2.20...2.80

3rd speed rpm : 750

travel mm : 6.30...6.70

4th speed rpm : 985

travel mm : 8.20...8.40

5th speed rpm : 1060

travel mm : 9.10...9.50

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 985

Rack travel in mm : 15.20...17.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700

Aneroid pressure h: 900

Del. quantity : 199.0...201.0

1000 : (196.0...204.0)

Spread cm3 : 4.00  
1000 : (7.50)

#### RATED SPEED

1st version  
Control lever  
position degrees: 61...69

#### Testing:

1st rack travel in: 13.30  
Speed rpm : 980...990  
2nd rack travel in: 4.00  
Speed rpm : 1050...1080  
4th rack travel in: 1250  
Speed rpm : 0.00...1.00

#### LOW IDLE 1

Control lever  
position degrees: 4...12

#### Testing:

Speed rpm : 100  
Minimum rack travel: 5.30  
Speed rpm : 250  
Rack travel in mm : 3.80...4.00

#### CONSTANT REGULATION

Speed rpm : 250...360

Aneroid/Altitude  
Compensator Test

#### 1st version

##### Setting

Speed rpm : 500  
Rack travel in mm : 900  
Contr.-rod trav.mm: 14.30...14.40

##### Measurement

Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 10.80...11.00  
2nd pressure hPa : 110  
Rack travel in m: 11.10...11.20  
3rd pressure hPa : 670  
Rack travel in m: 14.00...14.20

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: -  
Speed rpm : 700  
Del.quantity cm3/ : 132.0...135.0  
1000 s: (129.5...137.5)

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 13.30  
Speed rpm : 980...990

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 160.0...190.0  
1000 s: (156.0...194.0)  
Rack travel in mm : 20.00...21.00

#### LOW IDLE

Speed rpm : 250  
Rack travel in mm : 3.80...4.00  
Del.quantity cm3/ : 15.0...19.0  
1000 s: (12.5...21.5)  
Spread cm3 : 3.00  
1000 s: (6.00)

Remarks:

:

Delivery-valve spring pre-tension =  
2.40...2.60 mm.  
Permissible alteration from 2.20...2.90  
mm

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : ENA 11,9 c  
Edition : 07.03.88  
Replaces : 20.11.87  
Test oil : ISO-4113

Combination no. : 0 401 846 860

Injection pump  
Pump designation : PE6P120A32ORS3200  
EP type number : 0 411 826 766  
Governor  
Governor design. : RQV250...1000PA808-1  
Governor no. : 0 421 813 660

Customer-spec. information  
Customer : ENASA

Engine : 96 R1 BX

1st version kW : 265.0  
Rated speed : 2000

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 1 688 901 019

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
x Wall thickness  
x Length mm : 6.00X1.50X1000

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values -----

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.80...3.90  
: (3.75...3.95)  
Rack travel in mm : 9.00...12.00  
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 600

Rack travel in mm : 12.00...12.10

Del. quantity cm3/ : 25.6...25.8

100 s: (25.3...26.1)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 250.0

Rack travel in mm : 3.1...3.5

Del. quantity cm3/ : 1.7...2.3

100 s: (1.4...2.6)

Spread cm3 : 0.8

100 s: (1.2)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 250  
travel mm : 1.00...1.40

2nd speed rpm : 350  
travel mm : 1.70...2.30

3rd speed rpm : 700  
travel mm : 4.70...5.30

4th speed rpm : 1045  
travel mm : 8.00...8.20

5th speed rpm : 1135  
travel mm : 9.10...9.40

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1090

Rack travel in mm : 15.20...17.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 600

Aneroid pressure h: 1200



Del.quantity : 256.0...258.0  
1000 : (253.0...261.0)  
Spread cm3 : 5.00  
1000 : (9.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 42...50

Testing:  
1st rack travel in: 11.00  
Speed rpm : 1050...1060  
2nd rack travel in: 4.00  
Speed rpm : 1130...1160  
4th rack travel in: 1250  
Speed rpm : 0.00...1.00

LOW IDLE 1  
Control lever  
position degrees: 5...13

Testing:  
Speed rpm : 100  
Minimum rack travel: 4.80  
Speed rpm : 250  
Rack travel in mm : 3.10...3.50

CONSTANT REGULATION  
Speed rpm : 250...330

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 500  
Rack travel in mm : 1200  
Contr.-rod trav.mm: 12.00...12.10

Measurement  
Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 8.50...8.90  
2nd pressure hPa : 710  
Rack travel in m: 11.30...11.40  
3rd pressure hPa : 440  
Rack travel in m: 9.50...9.70

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: 1200  
Speed rpm : 900  
Del.quantity cm3/ : 249.0...255.0  
1000 s: (246.0...258.0)

K20

Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 151.0...153.0  
1000 s: (148.0...156.0)

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 11.00  
Speed rpm : 1050...1060

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 160.0...190.0  
1000 s: (156.0...194.0)

#### LOW IDLE

Speed rpm : 250  
Rack travel in mm : 3.10...3.50  
Del.quantity cm3/ : 17.0...23.0  
1000 s: (14.0...26.0)  
Spread cm3 : 8.00  
1000 s: (12.00)

Remarks:

:

Delivery-valve spring pre-tension  
3.2...3.4 mm.  
Permissible alteration of 3.0...3.5 mm  
APPLICATION  
Special-purpose vehicle

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : ENA 11,9 E  
 Edition : 07.03.88  
 Replaces : 2.11.87  
 Test oil : ISO-4113  
 Combination no. : 0 401 846 861  
 Injection pump  
 Pump designation : PE6P120A320RS3176-1  
 EP type number : 0 411 826 767  
 Governor  
 Governor design. : RQV250...1050PA808  
 Governor no. : 0 421 813 553

Customer-spec. information  
 Customer : ENASA

Engine : 96 R1 AX

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42  
 Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 1 688 901 019

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values -----

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.80...3.90  
 : (3.75...3.95)  
 Rack travel in mm : 9.00...12.00

K21

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1030  
 Rack travel in mm : 13.10...13.20  
 Del. quantity cm3/ : 23.2...23.4  
 100 s: (22.9...23.7)  
 Spread cm3 : 0.5  
 100 s: (0.9)

2nd speed rpm : 250.0  
 Rack travel in mm : 4.2...4.4  
 Del. quantity cm3/ : 2.5...3.1  
 100 s: (2.2...3.4)  
 Spread cm3 : 0.8  
 100 s: (1.2)

(B) Setting of injection pump  
 with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 250  
 travel mm : 1.00...1.40  
 2nd speed rpm : 350  
 travel mm : 1.70...2.30  
 3rd speed rpm : 700  
 travel mm : 4.50...5.10  
 4th speed rpm : 1095  
 travel mm : 8.20...8.40  
 5th speed rpm : 1195  
 travel mm : 9.40...9.80

## GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -1  
 Speed rpm : 1110  
 Rack travel in mm : 15.20...17.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 1030  
 Aneroid pressure h: 900  
 Del. quantity : 232.0...234.0  
 1000 : (229.0...237.0)

Spread cm3 : 5.00  
1000 : (9.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 42...50

Testing:  
1st rack travel in: 12.10  
Speed rpm : 1075...1085  
2nd rack travel in: 4.00  
Speed rpm : 1165...1195  
4th rack travel in: 1300  
Speed rpm : 0.00...1.00

LOW IDLE 1  
Control lever  
position degrees: 8...16

Testing:  
Speed rpm : 100  
Minimum rack travel: 5.90  
Speed rpm : 250  
Rack travel in mm : 4.20...4.40

CONSTANT REGULATION  
Speed rpm : 250...350

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 500  
Rack travel in mm : 900  
Contr.-rod trav.mm: 13.10...13.20

Measurement  
Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 9.70...10.10  
2nd pressure hPa : 550  
Rack travel in m: 12.60...12.70  
3rd pressure hPa : 280  
Rack travel in m: 10.90...11.10

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: 900  
Speed rpm : 650  
Del.quantity cm3/ : 229.0...235.0  
1000 s: (226.0...238.0)  
Aneroid pressure h: -  
Speed rpm : 500

Del.quantity cm3/ : 151.0...153.0  
1000 s: (148.0...156.0)

#### BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 12.10  
Speed rpm : 1075...1085

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 150.0...180.0  
1000 s: (146.0...184.0)

#### LOW IDLE

Speed rpm : 250  
Rack travel in mm : 4.20...4.40  
Del.quantity cm3/ : 25.0...31.0  
1000 s: (22.0...34.0)  
Spread cm3 : 8.00  
1000 s: (12.00)

#### Remarks:

Delivery-valve spring pre-tension  
3.2...3.4 mm.  
Permissible alteration of 3.0...3.5 mm  
APPLICATION  
Special-purpose vehicle

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : ENA 11,9 d  
Edition : 07.03.88  
Replaces : -  
Test oil : ISO-4113  
  
Combination no. : 0 401 846 862  
  
Injection pump  
Pump designation : PE6P110A32ORS3201  
EP type number : 0 411 816 753  
Governor  
Governor design. : RQ250/1050PA218-1  
Governor no. : 0 421 801 406

Customer-spec. information  
Customer : ENASA

Engine : 96 A4 AZ

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
x Wall thickness  
x Length mm : 6.00X1.50X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values -----

## BEGINNING OF DELIVERY

Test pressure, bar : 25...27

Prestroke mm : 3.20...3.30  
: (3.15...3.25)

Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1030

Rack travel in mm : 12.00...12.10

Del. quantity cm<sup>3</sup>/ : 12.5...12.7

100 s : (12.2...13.0)

Spread cm<sup>3</sup> : 0.4

100 s : (0.7)

2nd speed rpm : 250.0

Rack travel in mm : 7.9...8.1

Del. quantity cm<sup>3</sup>/ : 1.7...2.3

100 s : (1.4...2.6)

Spread cm<sup>3</sup> : 0.4

100 s : (0.7)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 600

Rack travel in mm : 15.60...16.40

## FULL LOAD DELIV. AT FULL LOAD STOP

### 1st version

Speed rpm : 1030

Del. quantity : 125.0...127.0

1000 : (122.0...130.0)

Spread cm<sup>3</sup> : 4.00

1000 : (7.50)

## RATED SPEED

### 1st version

Setting point:

Speed rpm : 600

Rack travel in mm : 16.0

## Testing:

1st rack travel in: 11.00

Speed rpm : 1095...1110

2nd rack travel in: 4.00

Speed rpm : 1140...1170

4th rack travel in: 1250

Speed rpm : 0.00...1.00

## LOW IDLE 1

Setting point w/out bumper spring

Speed rpm : 250

Rack travel in mm : 6.0

Testing:

Speed rpm : 100

Minimum rack trave: 7.50

Speed rpm : 250

Rack travel in mm : 5.90...6.10

Rack travel in mm : 2.00

Speed rpm : 290...330

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.00

Speed rpm : 1095...1110

STARTING FUEL DELIVERY

Speed rpm : 100

Del. quantity cm3/ : 143.0...163.0

1000 s: (139.0...167.0)

LOW IDLE

Speed rpm : 250

Rack travel in mm : 7.90...8.10

Del. quantity cm3/ : 17.0...23.0

1000 s: (14.0...26.0)

Spread cm3 : 4.50

1000 s: (7.50)

Remarks:

:

APPLICATION

Special-purpose vehicle

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : VOL 12,2 B  
Edition : 07.01.88  
Replaces : 16.10.87  
Test oil : ISO-4113

Combination no. : 0 401 846 864

Injection pump  
Pump designation : PE6P120A320RS3202  
EP type number : 0 411 826 769  
Governor  
Governor design. : RQV300..1050PA657-22  
Governor no. : 0 421 813 668

Customer-spec. information  
Customer : VOLVO

Engine : TD122K 442

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve  
: 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 1 688 901 019

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
x Wall thickness  
x Length mm : 6.00X1.50X1000

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values -----

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.60...3.70  
: (3.55...3.75)

Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 14.00...14.10

Del. quantity cm<sup>3</sup>/ : 25.1...25.3

100 s: (24.8...25.6)

Spread cm<sup>3</sup> : 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 4.8...5.0

Del. quantity cm<sup>3</sup>/ : 1.7...2.2

100 s: (1.4...2.4)

Spread cm<sup>3</sup> : 0.5

100 s: (0.7)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 300

travel mm : 1.50...1.90

2nd speed rpm : 500

travel mm : 4.00...4.60

3rd speed rpm : 800

travel mm : 6.30...6.70

4th speed rpm : 1110

travel mm : 7.80...8.00

5th speed rpm : 1205

travel mm : 9.10...9.70

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1150

Rack travel in mm : 15.20...17.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700

Aneroid pressure h: 900

Del. quantity : 251.0...253.0

1000 : (248.0...256.0)

Spread      cm<sup>3</sup> : 5.00  
             1000 : (9.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 58...66

Testing:  
1st rack travel in: 13.00  
Speed      rpm : 1105...1115  
2nd rack travel in: 4.00  
Speed      rpm : 1190...1220  
4th rack travel in: 1300  
Speed      rpm : 0.00...1.00

LOW IDLE 1  
Control lever  
position degrees: 8...16

Testing:  
Speed      rpm : 100  
Minimum rack travel: 6.40  
Speed      rpm : 300  
Rack travel in mm : 4.80...5.00

CONSTANT REGULATION  
Speed      rpm : 300...390

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed      rpm : 500  
Rack travel in mm : 900  
Contr.-rod trav.mm: 14.00...14.10

Measurement  
Speed      1/min : 500

1st pressure hPa : -  
Rack travel in m: 12.10...12.30  
2nd pressure hPa : 740  
Rack travel in m: 13.80...13.90  
3rd pressure hPa : 470  
Rack travel in m: 12.40...12.60

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: -  
Speed      rpm : 700  
Del.quantity cm<sup>3</sup>/ : 203.0...205.0  
                 1000 s: (200.0...208.0)

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 13.00  
Speed      rpm : 1105...1115

#### STARTING FUEL DELIVERY

Speed      rpm : 100  
Del.quantity cm<sup>3</sup>/ : 240.0...280.0  
                 1000 s: (236.0...284.0)  
Rack travel in mm : 20.00...21.00

#### LOW IDLE

Speed      rpm : 300  
Rack travel in mm : 4.80...5.00  
Del.quantity cm<sup>3</sup>/ : 17.0...22.0  
                 1000 s: (14.5...24.5)  
Spread      cm<sup>3</sup> : 5.00  
                 1000 s: (7.00)

#### Remarks:

:  
Delivery-valve spring pre-tension =  
2.40...2.60 mm.  
Permissible alteration from 2.20...2.90  
mm

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : VOL 12,2 B1  
 Edition : 07.01.88  
 Replaces : 16.10.87  
 Test oil : ISO-4113  
 Combination no. : 0 401 846 865  
 Injection pump  
 Pump designation : PE6P120A32ORS3202  
 EP type number : 0 411 826 769  
 Governor  
 Governor design. : RQV300..1025PA657-23  
 Governor no. : 0 421 813 669

Customer-spec. information  
 Customer : VOLVO

Engine : TD122A 35

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42  
 Overflow valve : 1 417 413 025  
 Inlet press., bar : 1.50  
 Test nozzle holder  
 assembly : 1 688 901 019  
 Opening  
 pressure, bar : 207...210  
 Orifice plate  
 diameter mm : 0,8  
 Test lines : 1 680 750 067  
 Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X1000  
 (A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values -----

## BEGINNING OF DELIVERY

Test pressure, bar : 25...27  
 Prestroke mm : 3.60...3.70  
 : (3.55...3.75)  
 Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 700  
 -----  
 Rack travel in mm : 11.90...12.00  
 -----  
 Del. quantity cm<sup>3</sup>/ : 20.8...21.0  
 -----  
 100 s : (20.5...21.3)  
 -----  
 Spread cm<sup>3</sup> : 0.5  
 -----  
 100 s : (0.9)  
 -----  
 2nd speed rpm : 300.0  
 Rack travel in mm : 4.8...5.0  
 Del. quantity cm<sup>3</sup>/ : 2.1...2.6  
 100 s : (1.8...2.8)  
 Spread cm<sup>3</sup> : 0.5  
 100 s : (0.7)

(B) Setting of injection pump  
 with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 300  
 travel mm : 1.50...1.90  
 2nd speed rpm : 500  
 travel mm : 4.20...4.80  
 3rd speed rpm : 800  
 travel mm : 6.30...6.70  
 4th speed rpm : 1080  
 travel mm : 8.30...8.50  
 5th speed rpm : 1150  
 travel mm : 9.50...9.90

## GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -1  
 Speed rpm : 1080  
 Rack travel in mm : 15.20...17.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 700  
 Aneroid pressure h : 900  
 Del. quantity : 208.0...210.0  
 1000 : (205.0...213.0)



Spread cm3 : 5.00  
1000 : (9.00)

#### RATED SPEED

1st version

Control lever  
position degrees: 58...66

Testing:

1st rack travel in: 10.90  
Speed rpm : 1080...1090  
2nd rack travel in: 4.00  
Speed rpm : 1140...1170  
4th rack travel in: 1250  
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever  
position degrees: 8...16

Testing:

Speed rpm : 100  
Minimum rack travel: 6.40  
Speed rpm : 300  
Rack travel in mm : 4.80...5.00

CONSTANT REGULATION

Speed rpm : 300...390

Aneroid/Altitude  
Compensator Test

1st version

Setting

Speed rpm : 500  
Rack travel in mm : 900  
Contr.-rod trav.mm: 11.90...12.00

Measurement

Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 11.60...11.70  
2nd pressure hPa : 450  
Rack travel in m: 11.70...11.80

#### FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -  
Speed rpm : 700  
Del.quantity cm3/ : 203.0...205.0  
1000 s: (200.0...208.0)

#### BREAKAWAY

K28

1st version  
1mm rack travel less than

full load rack tr: 10.90  
Speed rpm : 1080...1090

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 240.0...280.0  
1000 s: (236.0...284.0)  
Rack travel in mm : 20.00...21.00

#### LOW IDLE

Speed rpm : 300  
Rack travel in mm : 4.80...5.00  
Del.quantity cm3/ : 21.0...26.0  
1000 s: (18.5...28.5)  
Spread cm3 : 5.00  
1000 s: (7.00)

Remarks:

:  
Delivery-valve spring pre-tension =  
2.40...2.60 mm.  
Permissible alteration from 2.20...2.90  
mm

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : VOL 10,0 S3  
 Edition : 15.01.88  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 401 846 868  
 Injection pump  
 Pump designation : PE6P120A32ORS3186  
 EP type number : 0 411 826 756  
 Governor  
 Governor design. : RQV250...950PA657-14  
 Governor no. : 0 421 813 658

## Customer-spec. information

Customer : VOLVO

Engine : TD102FF

1st version kW : 230.0

Rated speed : 1900

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve  
 : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 1 688 901 019

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00x1.50x1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values -----

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.60...2.70  
 : (2.55...2.75)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 11.40...11.50

Del. quantity cm<sup>3</sup>/ : 19.7...19.9

100 s: (19.4...20.2)

Spread cm<sup>3</sup> : 0.5

100 s: (0.9)

2nd speed rpm : 250.0

Rack travel in mm : 3.9...4.1

Del. quantity cm<sup>3</sup>/ : 1.7...2.2

100 s: (1.4...2.4)

Spread cm<sup>3</sup> : 0.5

100 s: (0.7)

(B) Setting of injection pump  
 with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 250  
 travel mm : 1.00...1.40

2nd speed rpm : 350  
 travel mm : 2.20...2.80

3rd speed rpm : 700  
 travel mm : 6.40...6.60

4th speed rpm : 985  
 travel mm : 8.20...8.40

5th speed rpm : 1060  
 travel mm : 9.60...10.00

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1000

Rack travel in mm : 15.20...17.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700

Aneroid pressure h: 1000

Del.quantity : 197.0...199.0  
1000 : (194.0...202.0)  
Spread cm3 : 5.00  
1000 : (9.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 59...67

#### Testing:

1st rack travel in: 10.40  
Speed rpm : 980...990  
2nd rack travel in: 4.00  
Speed rpm : 1040...1070  
4th rack travel in: 1200  
Speed rpm : 0.00...1.00

#### LOW IDLE 1

Control lever  
position degrees: 4...12

#### Testing:

Speed rpm : 100  
Minimum rack travel: 5.40  
Speed rpm : 250  
Rack travel in mm : 3.90...4.10

#### CONSTANT REGULATION

Speed rpm : 250...360

Aneroid/Altitude  
Compensator Test

#### 1st version

##### Setting

Speed rpm : 500  
Rack travel in mm : 1000  
Contr.-rod trav.mm: 11.40...11.50

#### Measurement

Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 8.80...9.00  
2nd pressure hPa : 80  
Rack travel in m: 9.20...9.30  
3rd pressure hPa : 400  
Rack travel in m: 11.10...11.30

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: -  
Speed rpm : 700  
Del.quantity cm3/ : 143.0...145.0  
1000 s: (140.0...148.0)

#### BREAKAWAY

#### 1st version

1mm rack travel less than

full load rack tr: 10.40  
Speed rpm : 980...990

#### LOW IDLE

Speed rpm : 250  
Rack travel in mm : 3.90...4.10  
Del.quantity cm3/ : 17.0...22.0  
1000 s: (14.5...24.5)  
Spread cm3 : 5.00  
1000 s: (7.00)

Remarks:

:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : DAF 11,7 D4  
Edition : 12.02.88  
Replaces : -  
Test oil : ISO-4113

Combination no. : 0 401 846 873

Injection pump  
Pump designation : PE6P120A32ORS3183-1Y  
EP type number : 0 411 826 765  
Governor  
Governor design. : RQ250/1000PA832  
Governor no. : 0 421 801 368

Customer-spec. information  
Customer : DAF

Engine : WS 282

1st version kW : 282.0  
Rated speed : 2000

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 1 688 901 019

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
x Wall thickness  
x Length mm : 6.00X1.50X1000

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values -----

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.70...3.80  
: (3.65...3.85)  
Rack travel in mm : 9.00...12.00  
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

## BASIC SETTING

1st speed rpm : 850

Rack travel in mm : 13.20...13.30

Del. quantity cm<sup>3</sup>/ : 22.3...22.5

100 s: (22.0...22.8)

Spread cm<sup>3</sup> : 0.5

100 s: (0.9)

2nd speed rpm : 250.0

Rack travel in mm : 6.6...7.0

Del. quantity cm<sup>3</sup>/ : 1.4...2.0

100 s: (1.1...2.3)

Spread cm<sup>3</sup> : 0.8

100 s: (1.2)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 550

Rack travel in mm : 15.20...16.40

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 850

Aneroid pressure h: 1000

Del. quantity : 223.0...225.0

1000 : (220.0...228.0)

Spread cm<sup>3</sup> : 5.00

1000 : (9.00)

## RATED SPEED

1st version

Setting point:

Speed rpm : 550

Rack travel in mm : 15.8

Testing:

1st rack travel in: 12.20

Speed rpm : 1035...1050

2nd rack travel in: 4.00

Speed rpm : 1120...1150  
4th rack travel in: 1250  
Speed rpm : 0.00...1.00

#### LOW IDLE 1

Setting point w/out bumper spring  
Speed rpm : 250  
Rack travel in mm : 6.8

#### Testing:

Speed rpm : 100  
Minimum rack travel: 8.30  
Speed rpm : 250  
Rack travel in mm : 6.60...7.00  
Rack travel in mm : 2.00  
Speed rpm : 350...390

#### TORQUE CONTROL

Dimension a mm : -  
Torque control curve - 1st version  
1st speed rpm : 850  
Rack travel in m: 13.40...13.50  
2nd speed rpm : 1000  
Rack travel in m: 13.30...13.50

Aneroid/Altitude  
Compensator Test

#### 1st version

Setting  
Speed rpm : 600  
Rack travel in mm : 1000  
Contr.-rod trav.mm: 13.20...13.30

#### Measurement

Speed 1/min : 600

1st pressure hPa : -  
Rack travel in m: 10.10...10.30  
2nd pressure hPa : 570  
Rack travel in m: 12.40...12.50  
3rd pressure hPa : 310  
Rack travel in m: 10.70...11.00

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: -  
Speed rpm : 600  
Del.quantity cm3/ : 144.0...146.0  
1000 s: (141.0...149.0)

#### BREAKAWAY

#### 1st version

1mm rack travel less than

LD4

full load rack tr: 12.20  
Speed rpm : 1035...1050

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 260.0...300.0  
1000 s: (256.0...304.0)

#### LOW IDLE

Speed rpm : 250  
Rack travel in mm : 6.60...7.00  
Del.quantity cm3/ : 14.0...20.0  
1000 s: (11.0...23.0)  
Spread cm3 : 8.00  
1000 s: (12.00)

Remarks:

:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : DAF 11,7 d7  
Edition : 07.03.88  
Replaces : -  
Test oil : ISO-4113  
Combination no. : 0 401 846 873  
Injection pump  
Pump designation : PE6P120A32ORS3183Y  
EP type number : 0 411 826 778  
Governor  
Governor design. : RQ250/1000PA832  
Governor no. : 0 421 801 368

Customer-spec. information  
Customer : DAF

Engine : WS 282

1st version kW : 282.0  
Rated speed : 2000

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 1 688 901 019

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
x Wall thickness  
x Length mm : 6.00X1.50X1000

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values -----

BEGINNING OF DELIVERY  
Test pressure, bar: 25...27

Prestroke mm : 3.70...3.80  
: (3.65...3.85)  
Rack travel in mm : 9.00...12.00  
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

## BASIC SETTING

1st speed rpm : 850

Rack travel in mm : 13.40...13.50

Del. quantity cm3/ : 22.8...23.0

100 s: (22.5...23.3)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 250.0

Rack travel in mm : 6.6...7.0

Del. quantity cm3/ : 1.4...2.0

100 s: (1.1...2.3)

Spread cm3 : 0.8

100 s: (1.2)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 550

Rack travel in mm : 15.20...16.40

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 850

Aneroid pressure h: 1000

Del. quantity : 228.0...230.0

1000 : (225.0...233.0)

Spread cm3 : 5.00

1000 : (9.00)

## RATED SPEED

1st version

Setting point:

Speed rpm : 550

Rack travel in mm : 15.8

Testing:

1st rack travel in: 12.40

Speed rpm : 1035...1050

2nd rack travel in: 4.00

Speed rpm : 1120...1150  
4th rack travel in: 1250  
Speed rpm : 0.00...1.00

#### LOW IDLE 1

Setting point w/out bumper spring  
Speed rpm : 250  
Rack travel in mm : 6.8

#### Testing:

Speed rpm : 100  
Minimum rack travel: 8.30  
Speed rpm : 250  
Rack travel in mm : 6.60...7.00  
Rack travel in mm : 2.00  
Speed rpm : 350...390

#### TORQUE CONTROL

Dimension a mm : -  
Torque control curve - 1st version  
1st speed rpm : 850  
Rack travel in m: 13.70...13.80  
2nd speed rpm : 1000  
Rack travel in m: 13.60...13.80

Aneroid/Altitude  
Compensator Test

#### 1st version

Setting  
Speed rpm : 600  
Rack travel in mm : 1000  
Contr.-rod trav.mm: 13.40...13.50

#### Measurement

Speed 1/min : 600

#### 1st pressure hPa : -

Rack travel in m: 10.20...10.40  
2nd pressure hPa : 520  
Rack travel in m: 12.60...12.70  
3rd pressure hPa : 280  
Rack travel in m: 11.00...11.20

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: -  
Speed rpm : 600  
Del.quantity cm<sup>3</sup>/ : 145.0...147.0  
1000 s: (142.0...150.0)

#### BREAKAWAY

#### 1st version

1mm rack travel less than

L06

full load rack tr: 12.40  
Speed rpm : 1035...1050

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 260.0...300.0  
1000 s: (256.0...304.0)

#### LOW IDLE

Speed rpm : 250  
Rack travel in mm : 6.60...7.00  
Del.quantity cm<sup>3</sup>/ : 14.0...20.0  
1000 s: (11.0...23.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.00)

Remarks:

:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : DAF 11,7 D5  
 Edition : 12.02.88  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 401 846 874  
 Injection pump  
 Pump designation : PE6P120A32ORS3183-1  
 EP type number : 0 411 826 758  
 Governor  
 Governor design. : RQ250/1000PA832  
 Governor no. : 0 421 801 368

Customer-spec. information  
 Customer : DAF

Engine : WS 259

1st version kW : 259.0  
 Rated speed : 2000

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve  
 : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 1 688 901 019

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values -----

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.70...3.80  
 : (3.65...3.85)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

## BASIC SETTING

1st speed rpm : 850

Rack travel in mm : 12.20...12.30

Del. quantity cm3/ : 20.2...20.4

100 s: (19.9...20.7)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 250.0

Rack travel in mm : 6.6...7.0

Del. quantity cm3/ : 1.6...2.2

100 s: (1.3...2.5)

Spread cm3 : 0.8

100 s: (1.2)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 550

Rack travel in mm : 15.20...16.40

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 850

Aneroid pressure h: 1000

Del. quantity : 202.0...204.0

1000 : (199.0...207.0)

Spread cm3 : 5.00

1000 : (9.00)

## RATED SPEED

1st version

Setting point:

Speed rpm : 550

Rack travel in mm : 15.8

Testing:

1st rack travel in: 11.20

Speed rpm : 1035...1050

2nd rack travel in: 4.00



Speed rpm : 1125...1155  
4th rack travel in: 1250  
Speed rpm : 0.00...1.00

#### LOW IDLE 1

Setting point w/out bumper spring

Speed rpm : 250

Rack travel in mm : 6.8

#### Testing:

Speed rpm : 100

Minimum rack travel: 8.30

Speed rpm : 250

Rack travel in mm : 6.60...7.00

Rack travel in mm : 2.00

Speed rpm : 350...390

#### TORQUE CONTROL

Dimension a mm : -

Torque control curve - 1st version

1st speed rpm : 850

Rack travel in m: 12.40...12.50

2nd speed rpm : 1000

Rack travel in m: 12.30...12.50

Aneroid/Altitude

Compensator Test

#### 1st version

Setting

Speed rpm : 600

Rack travel in mm : 1000

Contr.-rod trav.m: 12.20...12.30

#### Measurement

Speed 1/min : 600

1st pressure hPa : -

Rack travel in m: 10.10...10.30

2nd pressure hPa : 430

Rack travel in m: 11.60...11.70

3rd pressure hPa : 280

Rack travel in m: 10.50...10.70

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: -

Speed rpm : 600

Del.quantity cm3/ : 144.0...146.0

1000 s: (141.0...149.0)

#### BREAKAWAY

#### 1st version

1mm rack travel less than

L08

full load rack tr: 11.20  
Speed rpm : 1035...1050

#### STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/ : 260.0...300.0

1000 s: (256.0...304.0)

#### LOW IDLE

Speed rpm : 250

Rack travel in mm : 6.60...7.00

Del.quantity cm3/ : 16.0...22.0

1000 s: (13.0...25.0)

Spread cm3 : 8.00

1000 s: (12.00)

Remarks:

:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : DAF 11,7 E4  
Edition : 12.02.88  
Replaces : -  
Test oil : ISO-4113

Combination no. : 0 401 846 875

Injection pump  
Pump designation : PE6P120A32ORS3183-1Y  
EP type number : 0 411 826 765  
Governor  
Governor design. : RQV250...1000PA851  
Governor no. : 0 421 813 604

Customer-spec. information  
Customer : DAF

Engine : WS 282

1st version kW : 282.0  
Rated speed : 2000

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 1 688 901 019

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
x Wall thickness  
x Length mm : 6.00X1.50X1000

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values -----

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.70...3.80  
                  : (3.65...3.85)  
Rack travel in mm : 9.00...12.00  
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

## BASIC SETTING

1st speed rpm : 850

Rack travel in mm : 13.20...13.30

Del. quantity cm<sup>3</sup>/ : 22.3...22.5

100 s: (22.0...22.8)

Spread cm<sup>3</sup> : 0.5

100 s: (0.9)

2nd speed rpm : 250.0

Rack travel in mm : 6.6...7.0

Del. quantity cm<sup>3</sup>/ : 1.4...2.0

100 s: (1.1...2.3)

Spread cm<sup>3</sup> : 0.8

100 s: (1.2)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 250

travel mm : 1.40...1.60

2nd speed rpm : 400

travel mm : 3.20...3.60

3rd speed rpm : 800

travel mm : 5.80...6.20

4th speed rpm : 1000

travel mm : 7.90...8.10

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1025

Rack travel in mm : 15.20...17.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 850

Aneroid pressure h: 1000

Del. quantity : 223.0...225.0

1000 : (220.0...228.0)

Spread cm<sup>3</sup> : 5.00

1000 : (9.00)

## RATED SPEED

1st version  
Control lever  
position degrees: 51...59

Testing:  
1st rack travel in: 12.20  
Speed rpm : 1040...1050  
2nd rack travel in: 4.00  
Speed rpm : 1130...1160  
4th rack travel in: 1250  
Speed rpm : 0.00...1.00

LOW IDLE 1  
Control lever  
position degrees: 16...24

Testing:  
Speed rpm : 100  
Minimum rack travel: 8.30  
Speed rpm : 250  
Rack travel in mm : 6.60...7.00

CONSTANT REGULATION  
Speed rpm : 275...385

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 600  
Rack travel in mm : 1000  
Contr.-rod trav.mm: 13.20...13.30

Measurement  
Speed 1/min : 600

1st pressure hPa : -  
Rack travel in m: 10.10...10.30  
2nd pressure hPa : 570  
Rack travel in m: 12.40...12.50  
3rd pressure hPa : 310  
Rack travel in m: 10.60...10.90

## START CUT-OUT

Speed 1/min : 200 (220)

## FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: -  
Speed rpm : 600  
Del.quantity cm3/ : 144.0...146.0  
1000 s: (141.0...149.0)

## BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 12.20  
Speed rpm : 1040...1050

## STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 260.0...300.0  
1000 s: (256.0...304.0)

## LOW IDLE

Speed rpm : 250  
Rack travel in mm : 6.60...7.00  
Del.quantity cm3/ : 14.0...20.0  
1000 s: (11.0...23.0)  
Spread cm3 : 8.00  
1000 s: (12.00)

Remarks:

:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : DAF 11,7 ES  
 Edition : 12.02.88  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 401 846 876  
 Injection pump  
 Pump designation : PE6P120A32ORS3183-1Z  
 EP type number : 0 411 826 760  
 Governor  
 Governor design. : RGV250...100CPA851-1  
 Governor no. : 0 421 813 605

Customer-spec. information  
 Customer : DAF

Engine : WS 225

1st version kW : 225.0  
 Rated speed : 2000

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve  
 : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 1 688 901 019

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00x1.50x1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values -----

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.70...3.80  
 : (3.65...3.85)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

## BASIC SETTING

1st speed rpm : 850

Rack travel in mm : 11.30...11.40

Del. quantity cm3/ : 18.1...18.3

100 s: (17.8...18.6)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 250.0

Rack travel in mm : 6.6...7.0

Del. quantity cm3/ : 1.4...2.0

100 s: (1.1...2.3)

Spread cm3 : 0.8

100 s: (1.2)

(B) Setting of injection pump  
 with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 250  
 travel mm : 1.40...1.60

2nd speed rpm : 400  
 travel mm : 3.20...3.60

3rd speed rpm : 800  
 travel mm : 5.80...6.20

4th speed rpm : 1000  
 travel mm : 7.90...8.10

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1025

Rack travel in mm : 15.20...17.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 850

Aneroid pressure h: 1000

Del. quantity : 181.0...183.0

1000 : (178.0...186.0)

Spread cm3 : 5.00

1000 : (9.00)

## RATED SPEED

1st version

Control lever

position degrees: 50...58

Testing:

1st rack travel in: 10.30

Speed rpm : 1040...1050

2nd rack travel in: 4.00

Speed rpm : 1120...1150

4th rack travel in: 1250

Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever

position degrees: 16...24

Testing:

Speed rpm : 100

Minimum rack travel: 8.30

Speed rpm : 250

Rack travel in mm : 6.60...7.00

CONSTANT REGULATION

Speed rpm : 275...385

Aneroid/Altitude

Compensator Test

1st version

Setting

Speed rpm : 600

Rack travel in mm : 1000

Contr.-rod trav.mm: 11.30...11.40

Measurement

Speed 1/min : 600

1st pressure hPa : -

Rack travel in m: 10.10...10.30

2nd pressure hPa : 330

Rack travel in m: 11.00...11.10

3rd pressure hPa : 260

Rack travel in m: 10.50...10.70

START CUT-OUT

Speed 1/min : 200 (220)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -

Speed rpm : 600

Del.quantity cm3/ : 144.0...146.0

1000 s: (141.0...149.0)

## BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 10.30

Speed rpm : 1040...1050

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/ : 260.0...300.0

1000 s: (256.0...304.0)

LOW IDLE

Speed rpm : 250

Rack travel in mm : 6.60...7.00

Del.quantity cm3/ : 14.0...20.0

1000 s: (11.0...23.0)

Spread cm3 : 8.00

1000 s: (12.00)

Remarks:

:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : DAF 11,7 E6  
 Edition : 12.02.88  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 401 846 877  
 Injection pump  
 Pump designation : PE6P120A32ORS3183-1  
 EP type number : 0 411 826 758  
 Governor  
 Governor design. : RQV250...1000PA851-2  
 Governor no. : 0 421 813 606

Customer-spec. information  
 Customer : DAF

Engine : WS 259

1st version kW : 259.0  
 Rated speed : 2000

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp, °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 1 688 901 019

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
 x Wall thickness  
 x Length mm : 6,00X1,50X1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values -----

## BEGINNING OF DELIVERY

Test pressure, bar : 25...27

Prestroke mm : 3.70...3.80  
 : (3.65...3.85)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

## BASIC SETTING

1st speed rpm : 850

Rack travel in mm : 12.20...12.30

Del. quantity cm<sup>3</sup>/ : 20.2...20.4

100 s : (19.9...20.7)

Spread cm<sup>3</sup> : 0.5

100 s : (0.9)

2nd speed rpm : 250.0

Rack travel in mm : 6.6...7.0

Del. quantity cm<sup>3</sup>/ : 1.4...2.0

100 s : (1.1...2.3)

Spread cm<sup>3</sup> : 0.8

100 s : (1.2)

(B) Setting of injection pump  
 with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 250

travel mm : 1.40...1.60

2nd speed rpm : 400

travel mm : 3.20...3.60

3rd speed rpm : 800

travel mm : 5.80...6.20

4th speed rpm : 1000

travel mm : 7.90...8.10

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1025

Rack travel in mm : 15.20...17.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 850

Aneroid pressure h : 1000

Del. quantity : 202.0...204.0

1000 : (199.0...207.0)

Spread cm<sup>3</sup> : 5.00

1000 : (9.00)

## RATED SPEED

1st version

Control lever

position degrees: 51...59

Testing:

1st rack travel in: 11.20

Speed rpm : 1040...1050

2nd rack travel in: 4.00

Speed rpm : 1120...1150

4th rack travel in: 1250

Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever

position degrees: 16...24

Testing:

Speed rpm : 100

Minimum rack travel: 8.30

Speed rpm : 250

Rack travel in mm : 6.60...7.00

CONSTANT REGULATION

Speed rpm : 275...385

Aneroid/Altitude

Compensator Test

1st version

Setting

Speed rpm : 600

Rack travel in mm : 1000

Contr.-rod trav.mm: 12.20...12.30

Measurement

Speed 1/min : 600

1st pressure hPa : -

Rack travel in m: 10.10...10.30

2nd pressure hPa : 430

Rack travel in m: 11.60...11.70

3rd pressure hPa : 280

Rack travel in m: 10.50...10.70

START CUT-OUT

Speed 1/min : 200 (0)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -

Speed rpm : 600

Del.quantity cm3/ : 144.0...146.0

1000 s: (141.0...149.0)

## BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.20

Speed rpm : 1040...1050

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/ : 260.0...300.0

1000 s: (256.0...304.0)

LOW IDLE

Speed rpm : 250

Rack travel in mm : 6.60...7.00

Del.quantity cm3/ : 14.0...20.0

1000 s: (11.0...23.0)

Spread cm3 : 8.00

1000 s: (12.00)

Remarks:

:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : DAF 11,7 D6  
 Edition : 12.02.88  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 401 846 878  
 Injection pump  
 Pump designation : PE6P120A32ORS3183-1Z  
 EP type number : 0 411 826 760  
 Governor  
 Governor design. : RQ250/1000PA832-1  
 Governor no. : 0 421 801 387

Customer-spec. information  
 Customer : DAF

Engine : WS 225

1st version kW : 225.0  
 Rated speed : 2000

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 1 688 901 019

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values -----

## BEGINNING OF DELIVERY

Test pressure, bar : 25...27

Prestroke mm : 3.70...3.80  
 : (3.65...3.85)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

## BASIC SETTING

1st speed rpm : 850

Rack travel in mm : 11.30...11.40

Del.quantity cm3/ : 18.1...18.3

100 s : (17.8...18.6)

Spread cm3 : 0.5

100 s : (0.9)

2nd speed rpm : 250.0

Rack travel in mm : 6.6...7.0

Del.quantity cm3/ : 1.4...2.0

100 s : (1.1...2.3)

Spread cm3 : 0.8

100 s : (1.2)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 550

Rack travel in mm : 15.20...16.40

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 850

Aneroid pressure h : 1000

Del.quantity : 181.0...183.0

1000 : (178.0...186.0)

Spread cm3 : 5.00

1000 : (9.00)

## RATED SPEED

1st version

Setting point:

Speed rpm : 550

Rack travel in mm : 15.8

Testing:

1st rack travel in: 10.30

Speed rpm : 1035...1050

2nd rack travel in: 4.00



Speed rpm : 1120...1150  
4th rack travel in: 1250  
Speed rpm : 0.00...1.00

#### LOW IDLE 1

Setting point w/out bumper spring  
Speed rpm : 250  
Rack travel in mm : 6.8

#### Testing:

Speed rpm : 100  
Minimum rack travel: 8.30  
Speed rpm : 250  
Rack travel in mm : 6.60...7.00  
Rack travel in mm : 2.00  
Speed rpm : 350...390

#### TORQUE CONTROL

Dimension a mm : -  
Torque control curve - 1st version  
1st speed rpm : 850  
Rack travel in m: 11.50...11.60  
2nd speed rpm : 1000  
Rack travel in m: 11.40...11.60

Aneroid/Altitude  
Compensator Test

#### 1st version

Setting  
Speed rpm : 600  
Rack travel in mm : 1000  
Contr.-rod trav.mm: 11.30...11.40

#### Measurement

Speed 1/min : 600

1st pressure hPa : -  
Rack travel in m: 10.10...10.30  
2nd pressure hPa : 330  
Rack travel in m: 11.00...11.10  
3rd pressure hPa : 260  
Rack travel in m: 10.50...10.70

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: -  
Speed rpm : 600  
Del.quantity cm3/ : 144.0...146.0  
1000 s: (141.0...149.0)

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 10.30  
Speed rpm : 1035...1050

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 260.0...300.0  
1000 s: (256.0...304.0)

#### LOW IDLE

Speed rpm : 250  
Rack travel in mm : 6.60...7.00  
Del.quantity cm3/ : 14.0...20.0  
1000 s: (11.0...23.0)  
Spread cm3 : 8.00  
1000 s: (12.00)

Remarks:

APPLICATION  
Omnibus

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : UNI 13,8 c1  
 Edition : 26.02.88  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 401 846 879  
 Injection pump  
 Pump designation : PE6P120A720RS3192  
 EP type number : 0 411 826 761  
 Governor  
 Governor design. : RQV300...900PA857-1  
 Governor no. : 0 421 813 683

Customer-spec. information  
 Customer : IVECO-UNIC

Engine : 8210.42.101

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42  
 Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 1 688 901 019

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values -----

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.40...3.50  
 : (3.35...3.55)

Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 900  
 Rack travel in mm : 13.20...13.30  
 Del. quantity cm<sup>3</sup>/ : 24.9...25.1  
 100 s: (24.6...25.4)  
 Spread cm<sup>3</sup> : 0.5  
 100 s: (0.9)

2nd speed rpm : 300.0  
 Rack travel in mm : 4.3...4.5  
 Del. quantity cm<sup>3</sup>/ : 1.5...2.1  
 100 s: (1.2...2.4)  
 Spread cm<sup>3</sup> : 0.8  
 100 s: (1.2)

(B) Setting of injection pump  
 with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 300  
 travel mm : 0.70...0.90  
 2nd speed rpm : 550  
 travel mm : 4.00...4.60  
 3rd speed rpm : 800  
 travel mm : 6.60...6.90  
 4th speed rpm : 900  
 travel mm : 7.70...7.90

## GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -1  
 Speed rpm : 950  
 Rack travel in mm : 15.20...17.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 900  
 Aneroid pressure h: 900  
 Del. quantity : 249.0...251.0  
 1000 : (246.0...254.0)  
 Spread cm<sup>3</sup> : 5.00  
 1000 : (9.00)

## RATED SPEED

1st version  
Control lever  
position degrees: 57...65

Testing:  
1st rack travel in: 12.20  
Speed rpm : 940...950  
2nd rack travel in: 4.00  
Speed rpm : 1060...1090  
4th rack travel in: 1200  
Speed rpm : 0.00...1.00

LOW IDLE 1  
Control lever  
position degrees: 4...12

Testing:  
Speed rpm : 100  
Minimum rack travel: 5.90  
Speed rpm : 300  
Rack travel in mm : 4.30...4.50

CONSTANT REGULATION  
Speed rpm : 370...490

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 500  
Rack travel in mm : 900  
Contr.-rod trav.mm: 13.20...13.30

Measurement  
Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 8.90...9.10  
2nd pressure hPa : 580  
Rack travel in m: 12.10...12.20  
3rd pressure hPa : 390  
Rack travel in m: 9.80...10.20

## FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: 900  
Speed rpm : 500  
Del.quantity cm3/ : 249.0...255.0  
1000 s: (246.0...258.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 119.0...121.0  
1000 s: (116.0...124.0)

## BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 12.20  
Speed rpm : 940...950

## STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 235.0...265.0  
1000 s: (231.0...269.0)

## LOW IDLE

Speed rpm : 300  
Rack travel in mm : 4.30...4.50  
Del.quantity cm3/ : 15.0...21.0  
1000 s: (12.0...24.0)  
Spread cm3 : 8.00  
1000 s: (12.00)

Remarks:

:

Check electrically unlatched starting  
fuel delivery (EES) with 24 volt.

On activation of the starting solenoid,  
the start position must be reached.

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB 11,0 S10  
 Edition : 18.12.87  
 Replaces : -  
 Test oil : ISO-4113

Combination no. : 0 401 846 880

Injection pump  
 Pump designation : PE6P110A32OLS3835-1  
 EP type number : 0 411 816 755  
 Governor  
 Governor design. : RQ300/1050PA187-19  
 Governor no. : 0 421 801 428

Customer-spec. information  
 Customer : DAIMLER-BENZ

Engine : OM441

1st version kW : 160.0  
 Rated speed : 2100

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve  
 : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
 quantity min. 1/h: 100...120

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values -----

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.00...4.10  
 : (3.95...4.15)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 6- 3- 5- 2- 4- 1

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

## BASIC SETTING

1st speed rpm : 750

Rack travel in mm : 13.00...13.10

Del. quantity cm3/ : 12.6...12.8

100 s: (12.2...13.0)

Spread cm3 : 0.4

100 s: (0.7)

2nd speed rpm : 300.0

Rack travel in mm : 8.8...9.0

Del. quantity cm3/ : 1.5...2.1

100 s: (1.2...2.3)

Spread cm3 : 0.4

100 s: (0.7)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 650

Rack travel in mm : 13.60...14.40

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 750

Del. quantity : 126.0...128.0

1000 : (122.5...130.5)

Spread cm3 : 4.00

1000 : (7.50)

## RATED SPEED

1st version

Setting point:

Speed rpm : 650

Rack travel in mm : 14.0

Testing:

1st rack travel in: 12.30

Speed rpm : 1095...1110

2nd rack travel in: 4.00  
Speed rpm : 1150...1180  
4th rack travel in: 1300  
Speed rpm : 0.00...2.00

#### LOW IDLE 1

Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 6.9

#### Testing:

Speed rpm : 200  
Minimum rack travel: 8.50  
Speed rpm : 300  
Rack travel in mm : 6.80...7.00  
Rack travel in mm : 2.00  
Speed rpm : 400...440

#### TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 1050  
2nd speed rpm : 600  
3rd speed rpm : 900

#### FUEL DELIVERY CHARACTERISTICS

##### 1st version

Speed rpm : 1050  
Del. quantity cm<sup>3</sup>/ : 138.0...142.0  
1000 s: (135.0...145.0)  
Spread cm<sup>3</sup> : 6.00  
1000 s: (9.0)

#### BREAKAWAY

##### 1st version

1mm rack travel less than  
full load rack tr: 12.30  
Speed rpm : 1095...1110

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del. quantity cm<sup>3</sup>/ : 130.0...150.0  
1000 s: (126.0...154.0)

Remarks:

:

#### APPLICATION

Omnibus

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB 11,0 s10  
 Edition : 12.02.88  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 401 846 881  
 Injection pump  
 Pump designation : PE6P110A32QLS3835-1  
 EP type number : 0 411 816 755  
 Governor  
 Governor design. : RQV300..1050PA884  
 Governor no. : 0 421 813 685

Customer-spec. information  
 Customer : DAIMLER-BENZ

Engine : OM441

1st version kW : 160.0  
 Rated speed : 2100

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
 quantity min. 1/h: 100...120

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values -----

## BEGINNING G. DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.00...4.10  
 : (3.95...4.15)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 6- 3- 5- 2- 4- 1

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

## BASIC SETTING

1st speed rpm : 750

Rack travel in mm : 13.00...13.10

Del. quantity cm<sup>3</sup>/ : 12.6...12.8

100 s: (12.3...13.0)

Spread cm<sup>3</sup> : 0.4

100 s: (0.7)

2nd speed rpm : 300.0

Rack travel in mm : 8.8...9.0

Del. quantity cm<sup>3</sup>/ : 1.5...2.1

100 s: (1.2...2.3)

Spread cm<sup>3</sup> : 0.4

100 s: (0.7)

(B) Setting of injection pump  
 with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 300  
 travel mm : 1.10...1.30

2nd speed rpm : 500  
 travel mm : 3.70...4.00

3rd speed rpm : 800  
 travel mm : 5.80...6.10

4th speed rpm : 1090  
 travel mm : 8.10...8.50

5th speed rpm : 1170  
 travel mm : 9.50...10.00

## GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -1

Speed rpm : 1100

Rack travel in mm : 15.20...17.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 750

Del.quantity : 126.0...128.0  
1000 : (123.5...130.5)  
Spread cm3 : 4.00  
1000 : (7.50)

#### RATED SPEED

1st version  
Control lever  
position degrees: 53...61

#### Testing:

1st rack travel in: 12.00  
Speed rpm : 1095...1110  
2nd rack travel in: 4.00  
Speed rpm : 1160...1190  
4th rack travel in: 1300  
Speed rpm : 0.00...1.00

#### LOW IDLE 1

Control lever  
position degrees: 18...26

#### Testing:

Speed rpm : 200  
Minimum rack travel: 10.30  
Speed rpm : 300  
Rack travel in mm : 8.80...9.00

#### CONSTANT REGULATION

Speed rpm : 300...550

#### START CUT-OUT

Speed 1/min : 220 (240)

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Speed rpm : 1050  
Del.quantity cm3/ : 138.0...142.0  
1000 s: (135.0...145.0)  
Spread cm3 : 6.00  
1000 s: (9.0)

#### BREAKAWAY

#### 1st version

1mm rack travel less than

full load rack tr: 12.00  
Speed rpm : 1095...1110

#### STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/ : 130.0...150.0  
1000 s: (126.0...154.0)

#### Remarks:

APPLICATION :  
Omnibus

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MAN 14,5 A  
Edition : 11.12.87  
Replaces : 30.3.87  
Test oil : ISO-4113

Combination no. : 0 401 848 082

Injection pump  
Pump designation : PE8P110A520/SLS851  
EP type number : 0 411 818 046  
Governor  
Governor design. : RQ250/1150PA688  
Governor no. : 0 421 801 231

Customer-spec. information  
Customer : MAN

Engine : D2848T

1st version kW : 245.0  
Rated speed : 2300

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
x Wall thickness  
x Length mm : 6.00x1.50x600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values -----

BEGINNING OF DELIVERY  
Test pressure, bar: 25...27

Prestroke mm : 3.00...3.10  
: (2.95...3.15)  
Rack travel in mm : 9.00...12.00

L23

Firing order : 8- 7- 2- 6- 3- 5-  
4- 1

Phasing : 0-45-90-135-180-225-  
270-315

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 8

## BASIC SETTING

1st speed rpm : 1150

Rack travel in mm : 10.80...10.90

Del. quantity cm3/ : 14.3...14.5

100 s: (14.0...14.7)

Spread cm3 : 0.4

100 s: (0.7)

2nd speed rpm : 250.0

Rack travel in mm : 4.9...5.1

Del. quantity cm3/ : 1.8...2.4

100 s: (1.5...2.6)

Spread cm3 : 0.4

100 s: (0.7)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 600

Rack travel in mm : 19.20...20.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1150

Aneroid pressure h: 1000

Del. quantity : 143.0...145.0

1000 : (140.5...147.5)

Spread cm3 : 4.00

1000 : (7.50)

## RATED SPEED

1st version

Setting point:

Speed rpm : 600

Rack travel in mm : 20.0

Testing:

1st rack travel in: 9.80

Speed rpm : 1195...1210

2nd rack travel in: 4.00



Speed rpm : 1280...1310  
4th rack travel in: 1450  
Speed rpm : 0.00...1.00

#### LOW IDLE 1

Setting point w/out bumper spring  
Speed rpm : 250  
Rack travel in mm : 5.0

#### Testing:

Speed rpm : 100  
Minimum rack travel: 6.50  
Speed rpm : 250  
Rack travel in mm : 4.90...5.10  
Rack travel in mm : 2.00  
Speed rpm : 310...350

#### TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 1150  
Rack travel in m: 10.80...10.90  
2nd speed rpm : 700  
Rack travel in m: 10.80...11.00

Aneroid/Altitude  
Compensator Test

#### 1st version

Setting  
Speed rpm : 500  
Rack travel in mm : 1000  
Contr.-rod trav.mm: 10.80...10.90

#### Measurement

Speed 1/min : 500

1st pressure hPa : -

Rack travel in m: 9.60...9.70

2nd pressure hPa : 290

Rack travel in m: 10.50...10.60

3rd pressure hPa : 230

Rack travel in m: 10.00...10.20

#### START CUT-OUT

Speed 1/min : 170 (190)

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: 1000  
Speed rpm : 700  
Del.quantity cm3/ : 137.0...141.0  
1000 s: (134.0...144.0)

Aneroid pressure h: -

Speed rpm : 500  
Del.quantity cm3/ : 108.0...110.0  
1000 s: (105.5...112.5)

Spread cm3 : -  
1000 s: (7.50)

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 9.80  
Speed rpm : 1195...1210

#### INTERMEDIATE RATED SPEED

Rack travel in mm : 4.00

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 190.0...210.0  
1000 s: (186.0...214.0)

#### LOW IDLE

Speed rpm : 250  
Rack travel in mm : 4.90...5.10  
Del.quantity cm3/ : 18.0...24.0  
1000 s: (15.5...26.5)  
Spread cm3 : 4.50  
1000 s: (7.50)

Remarks:

: MAN-NR. 2-7353

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : FIA 17,2 d  
Edition : 26.02.88  
Replaces : 22.5.87  
Test oil : ISO-4113

Combination no. : 0 401 848 757

Injection pump  
Pump designation : PE8P120A920/SLS3827  
EP type number : 0 411 828 712  
Governor  
Governor design. : RQV300...900PA475-1  
Governor no. : 0 421 813 420

Customer-spec. information  
Customer : IVECO-FIAT

Engine : 8280.22.201

1st version kW : 309.0  
Rated speed : 1800

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 1 688 901 019

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
x Wall thickness  
x Length mm : 6.00X1.50X1000

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values -----

## BEGINNING OF DELIVERY

Test pressure, bar : 25...27

Prestroke mm : 3.50...3.60  
: (3.45...3.65)  
Rack travel in mm : 9.00...12.00  
Firing order : 1- 8- 4- 3- 6- 5-  
7- 2

Phasing : 0-45-90-135-180-225-  
270-315  
Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 900

Rack travel in mm : 12.60...12.70

Del. quantity cm<sup>3</sup>/ : 21.2...21.4

100 s : (20.9...21.7)

Spread cm<sup>3</sup> : 0.5

100 s : (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 5.0...5.2

Del. quantity cm<sup>3</sup>/ : 1.7...2.3

100 s : (1.4...2.6)

Spread cm<sup>3</sup> : 0.6

100 s : (1.0)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 300

travel mm : 1.40...1.80

2nd speed rpm : 450

travel mm : 3.60...4.00

3rd speed rpm : 750

travel mm : 6.10...6.50

4th speed rpm : 900

travel mm : 7.70...7.90

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 960

Rack travel in mm : 15.20...17.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 900

Aneroid pressure h: 900

Del.quantity : 212.0...214.0  
1000 : (209.0...217.0)  
Spread cm3 : 5.00  
1000 : (9.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 56...64

#### Testing:

1st rack travel in: 11.60  
Speed rpm : 940...950  
2nd rack travel in: 4.00  
Speed rpm : 1050...1080  
4th rack travel in: 1200  
Speed rpm : 0.00...1.00

#### LOW IDLE 1

Control lever  
position degrees: 7...15  
Rack travel in mm : 5.1

#### Testing:

Speed rpm : 100  
Minimum rack travel: 6.40  
Speed rpm : 300  
Rack travel in mm : 5.00...5.20

#### CONSTANT REGULATION

Speed rpm : 310...415

Aneroid/Altitude  
Compensator Test

#### 1st version

##### Setting

Speed rpm : 500  
Rack travel in mm : 900  
Contr.-rod trav.mm: 12.60...12.70

##### Measurement

Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 9.00...9.30  
2nd pressure hPa : 440  
Rack travel in m: 11.60...11.70  
3rd pressure hPa : 340  
Rack travel in m: 9.60...10.00

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: 900  
Speed rpm : 550

Del.quantity cm3/ : 227.0...235.0  
1000 s: (224.0...238.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 132.0...134.0  
1000 s: (129.0...137.0)

#### BREAKAWAY

#### 1st version

1mm rack travel less than

full load rack tr: 11.60  
Speed rpm : 940...950

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 170.0...200.0  
1000 s: (166.0...204.0)

#### Remarks:

Check electrically unlatched starting  
fuel delivery (EES) with 24 volt.

On activation of the starting solenoid,  
the start position must be reached.

Note remarks

Test sheet : MB 14,6 K 9  
Edition : 18.12.87  
Replaces : 31.10.86  
Test oil : ISO-4113

Injection pump  
Pump designation : PE8P120A32OLS3807-10  
EP type number : 0 411 828 713  
Governor  
Governor design. : RQV300...1150PAS45-6  
Governor no. : 0 421 813 594

Engine : OM422 LA

1st version kW : 276.0  
Rated speed : 2300

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
quantity min. 1/h: 100...120

Test nozzle holder  
assembly : 1 688 901 019

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,8

**Test lines** : 1 680 750 067

Outside diameter  
x Wall thickness  
x Length mm : 6.00x1.50x1000

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values

Test pressure, bar: 25...27

```

Prestroke mm      : 4.00...4.10
                   : (3.95...4.15)
Rack travel in mm : 9.00...12.00
Firing order      : 8- 7- 2- 6- 3- 5-
                   : 4- 1

```

Phasing : 0-45-90-135-180-225-270-315  
Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 8

1st speed      rpm : 1150

Rack travel in mm : 11.50...11.60

Del.quantity cm3/ : 17.5...17.7

100 s: (17.2...18.0)

Spread cm<sup>3</sup> : 0.5

100 s: (0,9)

2nd speed      rpm    : 300.0

Rack travel in mm : 5.1...5.3

Del. quantity cm<sup>3</sup>/ : 1.2...2.0

100 s: (0.9...2.3)

Spread cm<sup>3</sup> : 0.8

100 s: (1.2)

(B) Setting of injection pump  
with governor

1st speed rpm : 300

travel mm : 1.40...1.60

2nd speed rpm : 800

travel mm : 6.00...6.20

3rd speed rpm : 1200

travel mm : 7.90...8.40

4th speed rpm : 1300

travel mm : 9.00...9.50

## Control-lever position

**Degree: -1**

Speed rpm : 1190

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

## 1st version

Speed rpm : 1150  
Aneroid pressure h: 700  
Del. quantity : 175.0...177.0  
1000 : (172.0...180.0)  
Spread cm3 : 5.00  
1000 : (9.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 49...57

#### Testing:

1st rack travel in: 10.50  
Speed rpm : 1190...1200  
2nd rack travel in: 4.00  
Speed rpm : 1270...1300  
4th rack travel in: 1400  
Speed rpm : 0.00...1.00

#### LOW IDLE 1

Control lever  
position degrees: 13...21

#### Testing:

Speed rpm : 100  
Minimum rack travel: 6.80  
Speed rpm : 300  
Rack travel in mm : 5.10...5.30

#### CONSTANT REGULATION

Speed rpm : 300...400

#### TORQUE CONTROL

Dimension a mm : 0.30  
Torque control curve - 1st version  
1st speed rpm : 1150  
Rack travel in m: 11.50...11.60  
2nd speed rpm : 750  
Rack travel in m: 11.80...12.00

Aneroid/Altitude  
Compensator Test

#### 1st version

##### Setting

Speed rpm : 500  
Rack travel in mm : -  
Contr. rod trav. mm: 10.20...10.40

#### Measurement

Speed 1/min : 500

1st pressure hPa : 410  
Rack travel in m: 10.50...10.60  
2nd pressure hPa : 490  
Rack travel in m: 11.10...11.30

#### START CUT-OUT

Speed 1/min : 220 (240)

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: 700  
Speed rpm : 750  
Del. quantity cm3/ : 187.0...190.0  
1000 s: (184.0...193.0)  
Spread cm3 : 8.00  
1000 s: (12.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del. quantity cm3/ : 137.0...139.0  
1000 s: (134.0...142.0)  
Spread cm3 : 8.00  
1000 s: (12.0)

#### BREAKAWAY

#### 1st version

1mm rack travel less than

full load rack tr: 10.50  
Speed rpm : 1190...1200

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del. quantity cm3/ : 140.0...160.0  
1000 s: (136.0...164.0)

Remarks:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB 14,6 F 4  
Edition : 07.01.88  
Replaces : 10.85  
Test oil : ISO-4113

Combination no. : 0 401 848 772

Injection pump  
Pump designation : PE8P120A320LS3811-11  
EP type number : 0 411 828 717  
Governor  
Governor design. : RQ300/1150PA556-1  
Governor no. : 0 421 801 290

Customer-spec. information  
Customer : DAIMLER-BENZ

Engine : OM422A

1st version kW : 243.0  
Rated speed : 2300

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
quantity min. 1/h: 100...120

Test nozzle holder  
assembly : 1 688 901 019

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
x Wall thickness  
x Length mm : 6,00X1,50X1000

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values -----

# BEGINNING OF DELIVERY

Prestroke mm : 4.00...4.10  
: (3.95...4.15)  
Rack travel in mm : 9.00...12.00  
Firing order : 8- 7- 2- 6- 3- 5-  
4- 1

Phasing : 0-45-90-135-180-225-  
270-315  
Tolerance + - ° : 0.50 (0.75)  
Time to cyl. no. : 8

## BASIC SETTING

1st speed rpm : 1150  
-----  
Rack travel in mm : 10.40...10.50  
-----  
Del. quantity cm<sup>3</sup>/ : 16.0...16.2  
-----  
100 s : (15.7...16.5)  
-----  
Spread cm<sup>3</sup> : 0.5  
-----  
100 s : (0.9)  
-----

2nd speed rpm : 300.0  
Rack travel in mm : 5.0...5.2  
Del. quantity cm<sup>3</sup>/ : 1.4...2.2  
100 s : (1.1...2.5)  
Spread cm<sup>3</sup> : 0.8  
100 s : (1.2)

## GUIDE SLEEVE POSITION

Control-lever position  
Degree: -2  
Speed rpm : 600  
Rack travel in mm : 14.60...16.40

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
Speed rpm : 1150  
Del. quantity : 160.0...162.0  
1000 : (157.0...165.0)  
Spread cm<sup>3</sup> : 5.00  
1000 : (9.00)

## RATED SPEED

1st version  
Setting point:  
Speed rpm : 600  
Rack travel in mm : 15.5

Testing:

1st rack travel in: 9.40  
Speed rpm : 1195...1210  
2nd rack travel in: 4.00  
Speed rpm : 1245...1275  
4th rack travel in: 1400  
Speed rpm : 0.00...1.00

LOW IDLE 1

Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 5.1

Testing:

Speed rpm : 100  
Minimum rack trave: 6.70  
Speed rpm : 300  
Rack travel in mm : 5.00...5.20  
Rack travel in mm : 2.00  
Speed rpm : 360...400

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 600  
Del.quantity cm3/ : 152.0...158.0  
1000 s: (149.0...161.0)  
Spread cm3 : 8.00  
1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 9.40  
Speed rpm : 1195...1210

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 140.0...160.0  
1000 s: (136.0...164.0)

Remarks:

;

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : KHD 9,6 X  
Edition : 15.01.88  
Replaces : 6.11.87  
Test oil : ISO-4113

Combination no. : 0 401 848 792

Injection pump  
Pump designation : PE8P120A920/SLS3208  
EP type number : 0 411 828 721  
Governor  
Governor design. : RQ325/1150PA879  
Governor no. : 0 421 801 417

Customer-spec. information  
Customer : KHD

Engine : BF8L513CP

1st version kW : 294.0  
Rated speed : 2300

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 1 688 901 019

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
x Wall thickness  
x Length mm : 6.00X1.50X1000

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values -----

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.40...3.50  
: (3.35...3.55)  
Rack travel in mm : 15.00...19.00  
Firing order : 1- 8- 7- 2- 6- 5-  
4- 3

Phasing : 0-45-90-135-180-225-  
270-315

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1150

Rack travel in mm : 12.30...12.40

Del. quantity cm<sup>3</sup>/ : 18.9...19.1

100 s: (18.6...19.4)

Spread cm<sup>3</sup> : 0.6

100 s: (1.0)

2nd speed rpm : 325.0

Rack travel in mm : 6.5...6.7

Del. quantity cm<sup>3</sup>/ : 1.6...2.2

100 s: (1.3...2.5)

Spread cm<sup>3</sup> : 0.9

100 s: (1.3)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 700

Rack travel in mm : 14.70...16.30

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1150

Aneroid pressure h: 900

Del. quantity : 189.0...191.0

1000 : (186.0...194.0)

Spread cm<sup>3</sup> : 6.00

1000 : (10.00)

## RATED SPEED

1st version

Setting point:

Speed rpm : 700

Rack travel in mm : 15.5

Testing:



1st rack travel in: 11.30  
Speed rpm : 1190...1200  
2nd rack travel in: 4.00  
Speed rpm : 1260...1290  
4th rack travel in: 1400  
Speed rpm : 0.00...1.00

#### LOW IDLE 1

Setting point w/out bumper spring  
Speed rpm : 325  
Rack travel in mm : 6.6

#### Testing:

Speed rpm : 100  
Minimum rack travel: 8.10  
Speed rpm : 325  
Rack travel in mm : 6.50...6.70  
Rack travel in mm : 2.00  
Speed rpm : 400...440

#### CONSTANT REGULATION

Speed rpm : 300...510

Aneroid/Altitude  
Compensator Test

#### 1st version

##### Setting

Speed rpm : 400  
Rack travel in mm : 900  
Contr.-rod travel mm: 12.30...12.40

##### Measurement

Speed 1/min : 400

1st pressure hPa : -  
Rack travel in m: 9.40...9.60  
2nd pressure hPa : 230  
Rack travel in m: 9.80...9.90  
3rd pressure hPa : 350  
Rack travel in m: 10.90...11.10

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: -

Speed rpm : 400  
Del. quantity cm<sup>3</sup>/ : 86.0...88.0  
1000 s: (83.0...91.0)

#### BREAKAWAY

#### 1st version

1mm rack travel less than

full load rack tr: 11.30  
Speed rpm : 1190...1200

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#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del. quantity cm<sup>3</sup>/ : 235.0...265.0  
1000 s: (230.0...270.0)

Remarks:

:

Check electrically unlatched starting  
fuel delivery (EES) with 24 volt.

On activation of the starting solenoid,  
the start position must be reached.

#### APPLICATION

Rail car

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB 14,7 D 5  
Edition : 18.12.87  
Replaces : -  
Test oil : ISO-4113  
  
Combination no. : 0 401 848 793  
  
Injection pump  
Pump designation : PE8P110A32OLS3842  
EP type number : 0 411 818 714  
Governor  
Governor design. : RQV300..1050PA524-12  
Governor no. : 0 421 813 679

Customer-spec. information  
Customer : DAIMLER-BENZ

Engine : OM442

1st version kW : 192.0  
Rated speed : 2100

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
quantity min. 1/h: 100...120

Test nozzle holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
x Wall thickness  
x Length mm : 6.00X1.50X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values -----

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.00...4.10  
                  : (3.95...4.15)  
Rack travel in mm : 9.00...12.00  
Firing order : 8- 7- 2- 6- 3- 5-  
                  4- 1

Phasing : 0-45-90-135-180-225-  
                  270-315

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 8

## BASIC SETTING

1st speed rpm : 1050

Rack travel in mm : 11.50...11.60

Del. quantity cm3/ : 11.7...11.9

100 s: (11.4...12.1)

Spread cm3 : 0.4

100 s: (0.8)

2nd speed rpm : 300.0

Rack travel in mm : 8.4...8.4

Del. quantity cm3/ : 1.5...2.1

100 s: (1.2...2.3)

Spread cm3 : 0.4

100 s: (0.7)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 300  
travel mm : 1.20...1.50

2nd speed rpm : 800  
travel mm : 5.60...6.00

3rd speed rpm : 1110  
travel mm : 7.80...8.40

4th speed rpm : 1150  
travel mm : 8.80...9.40

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1050

Rack travel in mm : 15.20...17.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1050

Del. quantity : 117.0...119.0

1000 : (114.5...121.5)

Spread      cm<sup>3</sup>    : 4.00  
             1000   : (8.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 48...56

Testing:  
1st rack travel in: 10.50  
Speed      rpm    : 1090...1100  
2nd rack travel in: 4.00  
Speed      rpm    : 1135...1165  
4th rack travel in: 1250  
Speed      rpm    : 0.00...1.00

LOW IDLE 1  
Control lever  
position degrees: 18...26

Testing:  
Speed      rpm    : 200  
Minimum rack trave: 10.50  
Speed      rpm    : 300  
Rack travel in mm : 8.40...8.60

CONSTANT REGULATION  
Speed      rpm    : 300...450

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Speed      rpm    : 600  
Del.quantity cm<sup>3</sup>/ : 97.0...100.0  
             1000 s: (94.0...103.0)  
Spread      cm<sup>3</sup>    : 8.00  
             1000 s: (11.0)

#### BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 10.50  
Speed      rpm    : 1090...1100

#### STARTING FUEL DELIVERY

Speed      rpm    : 100  
Del.quantity cm<sup>3</sup>/ : 140.0...160.0  
             1000 s: (136.0...164.0)

Remarks:

;

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB 14,7 C 5  
 Edition : 18.12.87  
 Replaces : 20.11.87  
 Test oil : ISO-4113

Combination no. : 0 401 848 794

Injection pump  
 Pump designation : PE8P110A32OLS3842  
 EP type number : 0 411 818 714  
 Governor  
 Governor design. : RQ300/1050PA187-18  
 Governor no. : 0 421 801 430

Customer-spec. information  
 Customer : DAIMLER-BENZ

Engine : OM442

1st version kW : 213.0  
 Rated speed : 2100

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve  
 : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
 quantity min. 1/h: 100...120

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values -----

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.00...4.10  
 : (3.95...4.15)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 8- 7- 2- 6- 3- 5-  
 4- 1

Phasing : 0-45-90-135-180-225-  
 270-315

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 8

## BASIC SETTING

1st speed rpm : 750

Rack travel in mm : 12.70...12.80

Del.quantity cm3/ : 12.6...12.8

100 s: (12.3...13.0)

Spread cm3 : 0.4

100 s: (0.7)

2nd speed rpm : 300.0

Rack travel in mm : 8.6...8.8

Del.quantity cm3/ : 1.5...2.1

100 s: (1.2...2.3)

Spread cm3 : 0.4

100 s: (0.7)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 650

Rack travel in mm : 13.60...14.40

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 750

Del.quantity : 126.0...128.0

1000 : (123.5...130.5)

Spread cm3 : 4.00

1000 : (7.50)

## RATED SPEED

1st version

Setting point:

Speed rpm : 650

Rack travel in mm : 14.0

Testing:

1st rack travel in: 11.70

Speed rpm : 1095...1110  
2nd rack travel in: 4.00  
Speed rpm : 1150...1180  
4th rack travel in: 1350  
Speed rpm : 0.00...2.00

#### LOW IDLE 1

Setting point w/out bumper spring

Speed rpm : 300

Rack travel in mm : 6.9

#### Testing:

Speed rpm : 200

Minimum rack trave: 9.00

Speed rpm : 300

Rack travel in mm : 6.80...7.00

Rack travel in mm : 2.00

Speed rpm : 400...440

#### FUEL DELIVERY CHARACTERISTICS

##### 1st version

Speed rpm : 1050

Del.quantity cm3/ : 136.0...140.0  
1000 s: (133.0...143.0)

Spread cm3 : 7.00  
1000 s: (10.0)

#### RACK STOP ADJUSTMENT

Speed rpm : 600

#### BREAKAWAY

##### 1st version

1mm rack travel less than

full load rack tr: 11.70

Speed rpm : 1095...1110

#### STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/ : 140.0...160.0  
1000 s: (136.0...164.0)

Remarks:

;

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB 14.7 d 6  
 Edition : 11.03.88  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 401 848 795  
 Injection pump  
 Pump designation : PE8P110A32OLS3842  
 EP type number : 0 411 818 714  
 Governor  
 Governor design. : RQV300..10SOPA884-1  
 Governor no. : 0 421 813 686

Customer-spec. information  
 Customer : DAIMLER-BENZ

Engine : OM442

1st version kW : 213.0  
 Rated speed : 2100

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
 quantity min. 1/h: 100...120

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values -----

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.00...4.10  
 : (3.95...4.15)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 8- 7- 2- 6- 3- 5-  
 4- 1

Phasing : 0-45-90-135-180-225-  
 270-315

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 8

## BASIC SETTING

1st speed rpm : 750

Rack travel in mm : 12.70...12.80

Del. quantity cm<sup>3</sup>/ : 12.6...12.8

100 s: (12.3...13.0)

Spread cm<sup>3</sup> : 0.4

100 s: (0.7)

2nd speed rpm : 300.0

Rack travel in mm : 8.4...8.8

Del. quantity cm<sup>3</sup>/ : 1.5...2.1

100 s: (1.2...2.3)

Spread cm<sup>3</sup> : 0.4

100 s: (0.7)

(B) Setting of injection pump  
 with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 300  
 travel mm : 1.10...1.40

2nd speed rpm : 800  
 travel mm : 7.80...8.20

3rd speed rpm : 1100  
 travel mm : 8.20...8.60

4th speed rpm : 1150  
 travel mm : 9.10...9.70

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1085

Rack travel in mm : 15.20...17.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 750

Del. quantity : 126.0...128.0

1000 : (123.5...130.5)

Spread        cm<sup>3</sup> : 4.00  
              1000 : (7.50)

Remarks:                    :

#### RATED SPEED

1st version  
Control lever  
position degrees: 53...61

Testing:  
1st rack travel in: 11.70  
Speed        rpm : 1090...1100  
2nd rack travel in: 4.00  
Speed        rpm : 1150...1180  
4th rack travel in: 1250  
Speed        rpm : 0.00...1.00

LOW IDLE 1  
Control lever  
position degrees: 18...26

Testing:  
Speed        rpm : 200  
Minimum rack trave: 10.00  
Speed        rpm : 300  
Rack travel in mm : 6.80...7.00

CONSTANT REGULATION  
Speed        rpm : 300...400

#### START CUT-OUT

Speed        1/min : 220 (240)

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Speed        rpm : 1050  
Del. quantity cm<sup>3</sup>/ : 136.0...140.0  
              1000 s: (133.0...143.0)  
Spread        cm<sup>3</sup> : 7.00  
              1000 s: (10.0)

#### BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 11.70  
Speed        rpm : 1090...1100

#### STARTING FUEL DELIVERY

Speed        rpm : 100  
Del. quantity cm<sup>3</sup>/ : 140.0...160.0  
              1000 s: (136.0...164.0)

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB 14,7 C 6  
 Edition : 26.02.88  
 Replaces : -  
 Test oil : ISO-4113

Combination no. : 0 401 848 796

Injection pump  
 Pump designation : PE8P110A32OLS3842-1  
 EP type number : 0 411 818 716  
 Governor  
 Governor design. : RQ300/1050PA187-18  
 Governor no. : 0 421 801 430

Customer-spec. information  
 Customer : DAIMLER-BENZ

Engine : OM442

1st version kW : 213.0  
 Rated speed : 2100

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve  
 : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
 quantity min. 1/h: 100...120

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values -----

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.00...4.10  
 : (3.95...4.15)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 8- 7- 2- 6- 3- 5-  
 4- 1

Phasing : 0-45-90-135-180-225-  
 270-315

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 8

## BASIC SETTING

1st speed rpm : 750

Rack travel in mm : 12.70...12.80

Del. quantity cm<sup>3</sup>/ : 12.6...12.8

100 s: (12.3...13.0)

Spread cm<sup>3</sup> : 0.4

100 s: (0.7)

2nd speed rpm : 300.0

Rack travel in mm : 8.4...8.8

Del. quantity cm<sup>3</sup>/ : 1.5...2.1

100 s: (1.2...2.3)

Spread cm<sup>3</sup> : 0.4

100 s: (0.7)

(B) Setting of injection pump  
 with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 300

travel mm : 2.20...2.50

2nd speed rpm : 650

travel mm : 6.90...7.10

3rd speed rpm : 1110

travel mm : 7.20...7.60

4th speed rpm : 1160

travel mm : 9.80...10.80

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 650

Rack travel in mm : 13.60...14.40

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 750

Del. quantity : 126.0...128.0

1000 : (123.5...130.5)



Spread cm<sup>3</sup> : 4.00  
1000 : (7.50)

Del.quantity cm<sup>3</sup>/ : 140.0...160.0  
1000 s: (136.0...164.0)

#### RATED SPEED

Remarks:

1st version

Setting point:

Speed rpm : 650  
Rack travel in mm : 14.0

Testing:

1st rack travel in: 11.70  
Speed rpm : 1095...1110  
2nd rack travel in: 4.00  
Speed rpm : 1150...1180  
4th rack travel in: 1350  
Speed rpm : 0.00...2.00

LOW IDLE 1

Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 6.9

Testing:

Speed rpm : 200  
Minimum rack trave: 9.00  
Speed rpm : 300  
Rack travel in mm : 6.80...7.00  
Rack travel in mm : 2.00  
Speed rpm : 400...440

#### FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 1050  
Del.quantity cm<sup>3</sup>/ : 136.0...140.0  
1000 s: (133.0...143.0)  
Spread cm<sup>3</sup> : 7.00  
1000 s: (10.0)

#### RACK STOP ADJUSTMENT

Speed rpm : 600

#### BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.70  
Speed rpm : 1095...1110

#### STARTING FUEL DELIVERY

Speed rpm : 100

M12

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB 14,6 m 3  
 Edition : 12.02.88  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 401 848 797  
 Injection pump  
 Pump designation : PE8P110A320LS3813-10  
 EP type number : 0 411 818 712  
 Governor  
 Governor design. : RQV350...1150PA378-6  
 Governor no. : 0 421 813 619

Customer-spec. information  
 Customer : DAIMLER-BENZ

Engine : OM422

1st version kW : 206.0  
 Rated speed : 2300

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
 quantity min. 1/h: 100...120

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values -----

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.00...4.10  
 : (3.95...4.15)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 8- 7- 2- 6- 3- 5-  
 4- 1

Phasing : 0-45-90-135-180-225-  
 270-315  
 Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 8

## BASIC SETTING

1st speed rpm : 1150  
 -----  
 Rack travel in mm : 11.50...11.60  
 -----  
 Del. quantity cm3/ : 13.1...13.3  
 -----  
 100 s: (12.8...13.5)  
 -----  
 Spread cm3 : 0.4  
 -----  
 100 s: (0.8)  
 -----

2nd speed rpm : 350.0  
 Rack travel in mm : 7.3...7.6  
 Del. quantity cm3/ : 1.4...1.8  
 100 s: (1.1...2.0)  
 Spread cm3 : 0.4  
 100 s: (0.7)

(B) Setting of injection pump  
 with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 350  
 travel mm : 1.50...1.70  
 2nd speed rpm : 500  
 travel mm : 1.70...1.90  
 3rd speed rpm : 800  
 travel mm : 4.60...4.90  
 4th speed rpm : 1175  
 travel mm : 7.60...7.90  
 5th speed rpm : 1300  
 travel mm : 9.10...9.50

## GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -1  
 Speed rpm : 1230  
 Rack travel in mm : 15.20...17.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 1150

Del.quantity : 131.0...133.0  
1000 : (128.5...135.5)  
Spread cm3 : 4.00  
1000 : (8.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 58...66

#### Testing:

1st rack travel in: 10.50  
Speed rpm : 1190...1200  
2nd rack travel in: 4.00  
Speed rpm : 1280...1310  
4th rack travel in: 1400  
Speed rpm : 0.00...1.00

#### LOW IDLE 1

Control lever  
position degrees: 10...18

#### Testing:

Speed rpm : 100  
Minimum rack trave: 8.70  
Speed rpm : 350  
Rack travel in mm : 7.30...7.60

#### CONSTANT REGULATION

Speed rpm : 385...495

#### START CUT-OUT

Speed 1/min : 270 (290)

#### FUEL DELIVERY CHARACTERISTICS

##### 1st version

Speed rpm : 600  
Del.quantity cm3/ : 109.0...113.0  
1000 s: (106.0...116.0)  
Spread cm3 : 6.00  
1000 s: (9.0)  
Speed rpm : 1150  
Del.quantity cm3/ : 84.0...87.0 \*  
1000 s: (81.0...90.0)  
Spread cm3 : 6.00  
1000 s: (9.00)

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 10.50  
Speed rpm : 1190...1200

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 140.0...160.0  
1000 s: (136.0...164.0)

Remarks:

:

\* = Set at reduced-delivery stop.

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB 18,3 D 6  
Edition : 13.05.87  
Replaces : -  
Test oil : ISO-4113  
Combination no. : 0 401 849 706  
Injection pump  
Pump designation : PE10P110A320LS3818-10  
EP type number : 0 411 819 705  
Governor  
Governor design. : RQV300...1150PA486-2  
Governor no. : 0 421 813 335

Customer-spec. information  
Customer : DAIMLER-BENZ

Engine : OM 423

1st version kW : 261.0  
Rated speed : 2300

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
quantity min. 1/h: 130...150

Test nozzle holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
x Wall thickness  
x Length mm : 6.00x1.50x600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values -----

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.00...4.10  
: (3.95...4.15)  
Rack travel in mm : 9.00...12.00  
Firing order : 10- 9- 4- 1- 8- 7  
: - 6- 3- 5- 2

Phasing : 0-45-72-117-144-189-  
Phasing : 216-261-288-333  
Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 10

## BASIC SETTING

1st speed rpm : 1150  
Rack travel in mm : 11.20...11.30  
Del. quantity cm<sup>3</sup>/ : 12.6...12.8  
100 s: (12.3...13.0)  
Spread cm<sup>3</sup> : 0.4  
100 s: (0.8)

2nd speed rpm : 300.0  
Rack travel in mm : 7.9...8.1  
Del. quantity cm<sup>3</sup>/ : 1.4...2.2  
100 s: (1.1...2.4)  
Spread cm<sup>3</sup> : 0.4  
100 s: (0.7)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 300  
travel mm : 1.60...1.80  
2nd speed rpm : 800  
travel mm : 5.80...6.20  
3rd speed rpm : 1200  
travel mm : 8.20...8.40  
4th speed rpm : 1260  
travel mm : 9.60...10.40

## GUIDE SLEEVE POSITION

Control-lever position  
Degree: -1  
Speed rpm : 1230  
Rack travel in mm : 15.20...17.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
Speed rpm : 1150

Del. quantity : 126.0...128.0  
1000 : (123.5...130.5)  
Spread cm<sup>3</sup> : 4.00  
1000 : (8.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 48...56

Testing:  
1st rack travel in: 10.20  
Speed rpm : 1190...1200  
2nd rack travel in: 4.00  
Speed rpm : 1235...1265  
4th rack travel in: 1400  
Speed rpm : 0.00...1.00

LOW IDLE 1  
Control lever  
position degrees: 14...22

Testing:  
Speed rpm : 100  
Minimum rack travel: 10.20  
Speed rpm : 300  
Rack travel in mm : 7.90...8.10  
Rack travel in mm : 2.00

CONSTANT REGULATION  
Speed rpm : 300...500

TORQUE CONTROL  
Dimension a mm : 0.30  
Torque control curve - 1st version  
1st speed rpm : 1150  
Rack travel in m: 11.20...11.30  
2nd speed rpm : 600  
Rack travel in m: 11.50...11.70  
3rd speed rpm : 900  
Rack travel in m: 11.50...11.70

#### START CUT-OUT

Speed 1/min : 220 (240)

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Speed rpm : 600  
Del. quantity cm<sup>3</sup>/ : 110.0...114.0  
1000 s: (107.0...117.0)  
Spread cm<sup>3</sup> : 6.00  
1000 s: (9.00)  
Speed rpm : 900  
Del. quantity cm<sup>3</sup>/ : 118.0...123.0  
1000 s: (115.0...126.0)

Spread cm<sup>3</sup> : 6.00  
1000 s: (9.00)

#### BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 10.20  
Speed rpm : 1190...1200

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del. quantity cm<sup>3</sup>/ : 140.0...160.0  
1000 s: (136.0...164.0)

Remarks:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MAN 18,2 C  
Edition : 22.01.88  
Replaces : 20.11.87  
Test oil : ISO-4113

Combination no. : 0 401 849 734

Injection pump  
Pump designation : PE10P120A520/4LS3843  
EP type number : 0 411 829 707  
Governor  
Governor design. : RQ300/1000PA837  
Governor no. : 0 421 801 372

Customer-spec. information  
Customer : MAN

Engine : D284OLF/460

1st version kW : 338.0  
Rated speed : 2000

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 1 688 901 019

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
x Wall thickness  
x Length mm : 6.00X1.50X1000

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values -----

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.90...4.00  
: (3.85...4.05)  
Rack travel in mm : 9.00...12.00  
Firing order : 10- 9- 4- 1- 8- 7  
: - 6- 3- 5- 2

Phasing : 0-45-72-117-144-189-  
216-261-288-333  
Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 10

## BASIC SETTING

1st speed rpm : 1000  
-----  
Rack travel in mm : 11.30...11.40  
-----  
Del. quantity cm3/ : 20.4...20.6  
-----  
100 s: (20.1...20.9)  
-----  
Spread cm3 : 0.5  
-----  
100 s: (0.9)  
-----

2nd speed rpm : 300.0  
Rack travel in mm : 6.0...6.2  
Del. quantity cm3/ : 1.7...2.3  
100 s: (1.4...2.6)  
Spread cm3 : 0.8  
100 s: (1.2)

## GUIDE SLEEVE POSITION

Control-lever position  
Degree: -2  
Speed rpm : 600  
Rack travel in mm : 19.20...20.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
Speed rpm : 1000  
Aneroid pressure h: 1000  
Del. quantity : 204.0...206.0  
1000 : (201.0...209.0)  
Spread cm3 : 5.00  
1000 : (9.00)

## RATED SPEED

1st version  
Setting point:  
Speed rpm : 600  
Rack travel in mm : 20.0

Testing:

1st rack travel in: 10.30  
Speed rpm : 1045...1060  
2nd rack travel in: 4.00  
Speed rpm : 1125...1155  
4th rack travel in: 1250  
Speed rpm : 0.00...1.00

#### LOW IDLE 1

Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 6.1

#### Testing:

Speed rpm : 100  
Minimum rack travel: 7.60  
Speed rpm : 300  
Rack travel in mm : 6.00...6.20  
Rack travel in mm : 2.00  
Speed rpm : 365...405

#### TORQUE CONTROL

Dimension a mm : -  
Torque control curve - 1st version  
1st speed rpm : 1000  
Rack travel in m: 11.80...11.90  
2nd speed rpm : 600  
Rack travel in m: 11.80...12.00

Aneroid/Altitude  
Compensator Test

#### 1st version

Setting  
Speed rpm : 500  
Rack travel in mm : 1000  
Contr.-rod trav.mm: 11.30...11.40

#### Measurement

Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 10.10...10.20  
2nd pressure hPa : 530  
Rack travel in m: 10.40...10.50  
3rd pressure hPa : 650  
Rack travel in m: 10.90...11.10

#### START CUT-OUT

Speed 1/min : 220 (240)

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 144.0...146.0  
1000 s: (141.0...149.0)

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 10.30  
Speed rpm : 1045...1060

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 190.0...210.0  
1000 s: (186.0...214.0)

#### LOW IDLE

Speed rpm : 300  
Rack travel in mm : 6.00...6.20  
Del.quantity cm3/ : 17.0...23.0  
1000 s: (14.0...26.0)  
Spread cm3 : 8.00  
1000 s: (12.00)

Remarks:

: MAN-NR. 2-7778

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MAN 18,2 C1  
Edition : 22.01.88  
Replaces : 26.6.87  
Test oil : ISO-4113

Combination no. : 0 401 849 735

Injection pump  
Pump designation : PE10P120A520/4LS3843  
EP type number : 0 411 829 707  
Governor  
Governor design. : RQV300...1000PA838  
Governor no. : 0 421 813 585

Customer-spec. information  
Customer : MAN

Engine : D2840LF/460

1st version kW : 338.0  
Rated speed : 2000

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 1 688 901 019

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
x Wall thickness  
x Length mm : 6.00X1.50X1000

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values -----

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.90...4.00  
                  : (3.85...4.05)  
Rack travel in mm : 9.00...12.00  
Firing order : 10- 9- 4- 1- 8- 7  
                  - 6- 3- 5- 2

Phasing : 0-45-72-117-144-189-  
                  216-261-288-333

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 10

## BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 11.30...11.40

Del. quantity cm3/ : 20.4...20.6

100 s: (20.1...20.9)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 6.0...6.2

Del. quantity cm3/ : 1.7...2.3

100 s: (1.4...2.6)

Spread cm3 : 0.8

100 s: (1.2)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 300  
travel mm : 1.00...1.40

2nd speed rpm : 500  
travel mm : 3.10...3.50

3rd speed rpm : 850  
travel mm : 6.60...6.90

4th speed rpm : 1000  
travel mm : 7.70...7.90

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1150

Rack travel in mm : 15.20...17.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000

Aneroid pressure h: 1000



Del.quantity : 204.0...206.0  
1000 : (201.0...209.0)  
Spread cm3 : 5.00  
1000 : (9.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 49...57

Testing:  
1st rack travel in: 10.30  
Speed rpm : 1040...1050  
2nd rack travel in: 4.00  
Speed rpm : 1115...1145  
4th rack travel in: 1250  
Speed rpm : 0.00...1.00

LOW IDLE 1  
Control lever  
position degrees: 13...21

Testing:  
Speed rpm : 100  
Minimum rack travel: 7.60  
Speed rpm : 300  
Rack travel in mm : 6.00...6.20  
Rack travel in mm : 2.00

CONSTANT REGULATION  
Speed rpm : 335...445

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 500  
Rack travel in mm : 1000  
Contr.-rod trav.mm: 11.30...11.40

Measurement  
Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 10.10...10.20  
2nd pressure hPa : 530  
Rack travel in m: 10.40...10.50  
3rd pressure hPa : 650  
Rack travel in m: 10.90...11.10

#### START CUT-OUT

Speed 1/min : 230 (250)

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 144.0...146.0  
1000 s: (141.0...149.0)

#### BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 10.30  
Speed rpm : 1040...1050

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 190.0...210.0  
1000 s: (186.0...214.0)

#### LOW IDLE

Speed rpm : 300  
Rack travel in mm : 6.00...6.20  
Del.quantity cm3/ : 17.0...23.0  
1000 s: (14.0...26.0)  
Spread cm3 : 8.00  
1000 s: (12.00)

Remarks:  
: MAN-NR. 2-7779

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB 11,0 D 1  
Edition : 18.12.87  
Replaces : 12.9.86  
Test oil : ISO-4113

Combination no. : 0 401 876 739

Injection pump  
Pump designation : PE6P110A320LS3805-10  
EP type number : 0 411 816 740  
Governor  
Governor design. : RSV650...1150P1A820-3

Governer no. : 0 421 833 177

Customer-spec. information  
Customer : DAIMLER-BENZ

Engine : OM421

1st version kW : 155.0  
Rated speed : 2300

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
quantity min. 1/h: 100...120

Test nozzle holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
x Wall thickness  
x Length mm : 6.00X1.50X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values -----

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.00...4.10  
: (3.95...4.15)  
Rack travel in mm : 9.00...12.00  
Firing order : 6- 3- 5- 2- 4- 1

Phasing : 0-45-120-165-240-285

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

## BASIC SETTING

1st speed rpm : 1180

Rack travel in mm : 12.50...12.60

Del. quantity cm<sup>3</sup>/ : 13.7...13.9

100 s: (13.4...14.1)

Spread cm<sup>3</sup> : 0.4

100 s: (0.8)

2nd speed rpm : 650.0

Rack travel in mm : 6.0...6.2

Del. quantity cm<sup>3</sup>/ : 1.6...2.2

100 s: (1.3...2.4)

Spread cm<sup>3</sup> : 0.4

100 s: (0.7)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : ?

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1180

Del. quantity : 137.0...139.0

1000 : (134.5...141.5)

Spread cm<sup>3</sup> : 4.00

1000 : (8.00)

## RATED SPEED

1st version

Control lever

position degrees: 53...61

Testing:

1st rack travel in: 11.50  
Speed rpm : 1210...1220  
2nd rack travel in: 4.00  
Speed rpm : 1240...1260  
4th rack travel in: 1350  
Speed rpm : 0.30...1.40

#### LOW IDLE 1

Control lever  
position degrees: 26...34  
Setting point w/out bumper spring  
Speed rpm : 650  
Rack travel in mm : 6.1

#### Testing:

Speed rpm : 100  
Minimum rack travel: 19.50  
Speed rpm : 650  
Rack travel in mm : 6.00...6.20  
Rack travel in mm : 2.00  
Speed rpm : 650...715

#### SET IDLE AUXILIARY SPRING

Rack travel in mm : 2.00

#### TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1180  
Rack travel in m: 12.40...12.50  
2nd speed rpm : 970  
Rack travel in m: 12.90...13.10  
3rd speed rpm : 1100  
Rack travel in m: 12.50...12.70  
4th speed rpm : 700  
Rack travel in m: 13.10...13.30

#### FUEL DELIVERY CHARACTERISTICS

##### 1st version

Speed rpm : 970  
Del. quantity cm<sup>3</sup>/ : 137.0...141.0  
1000 s: (134.0...144.0)  
Spread cm<sup>3</sup> : 6.00  
1000 s: (9.0)

#### BREAKAWAY

##### 1st version

1mm rack travel less than

full load rack tr: 11.50  
Speed rpm : 1210...1220

#### STARTING FUEL DELIVERY

Speed rpm : 100

Del. quantity cm<sup>3</sup>/ : 140.0...160.0  
1000 s: (136.0...164.0)

Remarks:

:

When adjusting and checking, adjust  
speed regulation to 1210...1220 l/min.  
Afterwards, readjust speed regulation  
to 1160...1170 l/min.

#### APPLICATION

Forage harvester

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB 11,0 D 5  
Edition : 18.12.87  
Replaces : -  
Test oil : ISO-4113

Combination no. : 0 401 876 739A

Injection pump  
Pump designation : PE6P110A320LS3805-10  
EP type number : 0 411 816 740  
Governor  
Governor design. : RSV650...1150P1A820-3  
Governor no. : 0 421 833 177

Customer-spec. information  
Customer : DAIMLER-BENZ

Engine : OM421

1st version kW : 155.0  
Rated speed : 2300

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
quantity min. 1/h: 100...120

Test nozzle holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
x Wall thickness  
x Length mm : 6.00x1.50x600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values -----

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.00...4.10  
(3.95...4.15)  
Rack travel in mm : 9.00...12.00  
Firing order : 6- 3- 5- 2- 4- 1

Phasing : 0-45-120-165-240-285

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

## BASIC SETTING

1st speed rpm : 1180

Rack travel in mm : 13.00...13.10

Del. quantity cm<sup>3</sup>/ : 14.5...14.7

100 s: (14.2...14.9)

Spread cm<sup>3</sup> : 0.4

100 s: (0.8)

2nd speed rpm : 650.0

Rack travel in mm : 6.0...6.2

Del. quantity cm<sup>3</sup>/ : 1.6...2.2

100 s: (1.3...2.4)

Spread cm<sup>3</sup> : 0.4

100 s: (0.7)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : ?

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1180

Del. quantity : 145.0...147.0

1000 : (142.5...149.5)

Spread cm<sup>3</sup> : 4.00

1000 : (8.00)

## RATED SPEED

1st version

Control lever

position degrees: 53...61

Testing:

1st rack travel in: 12.00  
Speed rpm : 1210...1220  
2nd rack travel in: 4.00  
Speed rpm : 1240...1260  
4th rack travel in: 1350  
Speed rpm : 0.30...1.40

#### LOW IDLE 1

Control lever  
position degrees: 26...34  
Setting point w/out bumper spring  
Speed rpm : 650  
Rack travel in mm : 6.1

#### Testing:

Speed rpm : 100  
Minimum rack travel: 19.50  
Speed rpm : 650  
Rack travel in mm : 6.00...6.20  
Rack travel in mm : 2.00  
Speed rpm : 650...715

#### SET IDLE AUXILIARY SPRING

Rack travel in mm : 2.00

#### TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1180  
Rack travel in m: 12.90...13.00  
2nd speed rpm : 970  
Rack travel in m: 13.40...13.60  
3rd speed rpm : 1100  
Rack travel in m: 13.00...13.20  
4th speed rpm : 700  
Rack travel in m: 13.60...13.80

#### FUEL DELIVERY CHARACTERISTICS

##### 1st version

Speed rpm : 970  
Del. quantity cm<sup>3</sup>/ : 144.0...148.0  
1000 s: (141.0...151.0)  
Spread cm<sup>3</sup> : 6.00  
1000 s: (9.0)

#### BREAKAWAY

##### 1st version

1mm rack travel less than

full load rack tr: 12.00  
Speed rpm : 1210...1220

#### STARTING FUEL DELIVERY

Speed rpm : 100

Del. quantity cm<sup>3</sup>/ : 140.0...160.0  
1000 s: (136.0...164.0)

Remarks:

:

When adjusting and checking, adjust  
speed regulation to 1210...1220 l/min.  
Afterwards, readjust speed regulation  
to 1160...1170 l/min.

#### APPLICATION

Combine-harvester

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB 11,0 Q 8  
Edition : 18.12.87  
Replaces : 7.12.87  
Test oil : ISO-4113

Combination no. : 0 401 876 740A

Injection pump  
Pump designation : PE6P120A320LS3815-10  
EP type number : 0 411 826 735  
Governor  
Governor design. : RSV750...1150P1A820-4  
Governor no. : 0 421 833 179

Customer-spec. information  
Customer : DAIMLER-BENZ

Engine : OM421A

1st version kW : 184.0  
Rated speed : 2300

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
quantity min. 1/h: 100...120

Test nozzle holder  
assembly : 1 688 901 019

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
x Wall thickness  
x Length mm : 6.00X1.50X1000

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values -----

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.00...4.10  
: (3.95...4.15)  
Rack travel in mm : 9.00...12.00  
Firing order : 6- 3- 5- 2- 4- 1

Phasing : 0-45-120-165-240-285

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

## BASIC SETTING

1st speed rpm : 1180

Rack travel in mm : 10.40...10.50

Del. quantity cm3/ : 15.3...15.5

100 s: (15.0...15.8)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 750.0

Rack travel in mm : 3.3...3.5

Del. quantity cm3/ : 1.8...2.4

100 s: (1.5...2.7)

Spread cm3 : 0.8

100 s: (1.2)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : ?

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1180

Del. quantity : 153.0...155.0

1000 : (150.0...158.0)

Spread cm3 : 5.00

1000 : (9.00)

## RATED SPEED

1st version

Control lever  
position degrees: 56...64

Remarks:

Testing:

1st rack travel in: 9.40  
Speed rpm : 1210...1220  
2nd rack travel in: 4.00  
Speed rpm : 1240...1260  
4th rack travel in: 1350  
Speed rpm : 0.30...1.40

When adjusting and checking, adjust  
speed regulation to 1210...1220 l/min.  
Afterwards, readjust speed regulation  
to 1160...1170 l/min.

APPLICATION  
Forage harvester

LOW IDLE 1

Control lever  
position degrees: 32...40  
Setting point w/out bumper spring  
Speed rpm : 750  
Rack travel in mm : 3.4  
Speed rpm : 750  
Rack travel in mm : 3.30...3.50  
Rack travel in mm : 2.00  
Speed rpm : 755...815

SET IDLE AUXILIARY SPRING  
Rack travel in mm : 2.00

TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 1180  
Rack travel in m: 10.40...10.50  
2nd speed rpm : 975  
Rack travel in m: 11.00...11.20  
3rd speed rpm : 600  
Rack travel in m: 11.30...11.50

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 950  
Del. quantity cm<sup>3</sup>/ : 164.0...168.0  
1000 s: (161.0...171.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 9.40  
Speed rpm : 1210...1220

STARTING FUEL DELIVERY

Speed rpm : 100  
Del. quantity cm<sup>3</sup>/ : 140.0...160.0  
1000 s: (136.0...164.0)

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB 11,0 Q 9  
 Edition : 18.12.87  
 Replaces : -  
 Test oil : ISO-4113

Combination no. : 0 401 876 7408

Injection pump  
 Pump designation : PE6P120A32OLS3815-10  
 EP type number : 0 411 826 735  
 Governor  
 Governor design. : RSV750...1150P1A820-  
 4  
 Governor no. : 0 421 833 179

Customer-spec. information  
 Customer : DAIMLER-BENZ

Engine : OM421A

1st version kW : 184.0  
 Rated speed : 2300

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
 quantity min. 1/h: 100...120

Test nozzle holder  
 assembly : 1 688 901 019

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values -----

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.00...4.10  
 : (3.95...4.15)

Rack travel in mm : 9.00...12.00

Firing order : 6- 3- 5- 2- 4- 1

Phasing : 0-45-120-165-240-285

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

## BASIC SETTING

1st speed rpm : 1180

Rack travel in mm : 10.70...10.80

Del. quantity cm3/ : 15.7...15.9  
 100 s: (15.4...16.2)

Spread cm3 : 0.5  
 100 s: (0.9)

2nd speed rpm : 750.0

Rack travel in mm : 3.3...3.5

Del. quantity cm3/ : 1.8...2.4  
 100 s: (1.5...2.7)

Spread cm3 : 0.8  
 100 s: (1.2)

## GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension  
 Click setting x : ?

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1180

Del. quantity : 157.0...159.0  
 1000 : (154.0...162.0)

Spread cm3 : 5.00  
 1000 : (9.00)

## RATED SPEED

1st version



Control lever  
position degrees: 56...64

Testing:

1st rack travel in: 9.70  
Speed rpm : 1210...1220  
2nd rack travel in: 4.00  
Speed rpm : 1240...1260  
4th rack travel in: 1350  
Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever  
position degrees: 32...40  
Setting point w/out bumper spring  
Speed rpm : 750  
Rack travel in mm : 3.4  
Speed rpm : 750  
Rack travel in mm : 3.30...3.50  
Rack travel in mm : 2.00  
Speed rpm : 755...815

SET IDLE AUXILIARY SPRING

Rack travel in mm : 2.00

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1180  
Rack travel in m: 10.70...10.80  
2nd speed rpm : 950  
Rack travel in m: 11.20...11.40  
3rd speed rpm : 1075  
Rack travel in m: 11.00...11.20

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 950  
Del. quantity cm<sup>3</sup>/ : 145.0...172.0  
1000 s: (145.0...175.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 9.70  
Speed rpm : 1210...1220

STARTING FUEL DELIVERY

Speed rpm : 100  
Del. quantity cm<sup>3</sup>/ : 140.0...160.0  
1000 s: (136.0...164.0)

Remarks:

:

When adjusting and checking, adjust  
speed regulation to 1210...1220 l/min.  
Afterwards, readjust speed regulation  
to 1160...1170 l/min.

APPLICATION

Combine-harvester

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB 11,0 Q10  
Edition : 18.12.87  
Replaces : -  
Test oil : ISO-4113

Combination no. : 0 401 876 740C

Injection pump  
Pump designation : PE6P120A32OLS3815-10  
EP type number : 0 411 826 735  
Governor  
Governor design. : RSV750...1150P1A820-  
4

Governer no. : 0 421 833 179

Customer-spec. information  
Customer : DAIMLER-BENZ

Engine : OM421A

1st version kW : 184.0  
Rated speed : 2300

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
quantity min. 1/h: 100...120

Test nozzle holder  
assembly : 1 688 901 019

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
x Wall thickness  
x Length mm : 6.00X1.50X1000

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values -----

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.00...4.10  
: (3.95...4.15)  
Rack travel in mm : 9.00...12.00  
Firing order : 6- 3- 5- 2- 4- 1

Phasing : 0-45-120-165-240-285

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

## BASIC SETTING

1st speed rpm : 1180  
-----  
Rack travel in mm : 10.10...10.20  
-----  
Del.quantity cm3/ : 14.8...15.0  
-----  
100 s: (14.5...15.3)  
-----  
Spread cm3 : 0.5  
-----  
100 s: (0.9)  
-----

2nd speed rpm : 750.0  
Rack travel in mm : 3.3...3.5  
Del.quantity cm3/ : 1.8...2.4  
100 s: (1.5...2.7)  
Spread cm3 : 0.8  
100 s: (1.2)

## GUIDE SLEEVE POSITION

Control-lever position  
Degree: -3  
Speed rpm : 800  
Rack travel in mm : 0.30...0.70

Governor spring pre-tension  
Click setting x : ?

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
Speed rpm : 1180  
Del.quantity : 148.0...150.0  
1000 : (145.0...153.0)  
Spread cm3 : 5.00  
1000 : (9.00)

## RATED SPEED

1st version

Control lever  
position degrees: 56...64

Testing:

1st rack travel in: 9.10  
Speed rpm : 1210...1220  
2nd rack travel in: 4.00  
Speed rpm : 1240...1260  
4th rack travel in: 1350  
Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever  
position degrees: 32...40  
Setting point w/out bumper spring  
Speed rpm : 750  
Rack travel in mm : 3.4  
Speed rpm : 750  
Rack travel in mm : 3.30...3.50  
Rack travel in mm : 2.00  
Speed rpm : 755...815

SET IDLE AUXILIARY SPRING  
Rack travel in mm : 2.00

TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 1180  
Rack travel in m: 10.10...10.20  
2nd speed rpm : 950  
Rack travel in m: 10.50...10.70  
3rd speed rpm : 1075  
Rack travel in m: 10.30...10.40

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 950  
Del. quantity cm<sup>3</sup>/ : 159.0...163.0  
1000 s: (156.0...166.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 9.10  
Speed rpm : 1210...1220

STARTING FUEL DELIVERY

Speed rpm : 100  
Del. quantity cm<sup>3</sup>/ : 140.0...160.0  
1000 s: (136.0...164.0)

Remarks:

:

When adjusting and checking, adjust  
speed regulation to 1210...1220 l/min.  
Afterwards, readjust speed regulation  
to 1160...1170 l/min.

APPLICATION

Forage harvester

NO2

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB 11,0 Q 7  
Edition : 11.12.87  
Replaces : 9.10.87  
Test oil : ISO-4113

Combination no. : 0 401 876 753

Injection pump  
Pump designation : PE6P120A32OLS3815-10  
EP type number : 0 411 826 735  
Governor  
Governor design. : RSV750...1150P1A820-6

Governer no. : 0 421 833 227

Customer-spec. information  
Customer : DAIMLER-BENZ

Engine : OM421A

1st version kW : 184.0  
Rated speed : 2300  
2nd version kW : 184.0  
Rated speed : 2300

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve  
: 1 417 413 025

Inlet press., bar : 1.50

Overflow  
quantity min. 1/h: 100...120

Test nozzle holder  
assembly : 1 688 901 019

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
x Wall thickness  
x Length mm : 6.00x1.50x1000

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values -----

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.00...4.10  
: (3.95...4.15)  
Rack travel in mm : 9.00...12.00  
Firing order : 6- 3- 5- 2- 4- 1

Phasing : 0-45-120-165-240-285

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

## BASIC SETTING

1st speed rpm : 1180  
-----  
Rack travel in mm : 10.70...10.80  
-----  
Del. quantity cm<sup>3</sup>/ : 15.7...15.9  
-----  
100 s: (15.4...16.2)  
-----  
Spread cm<sup>3</sup> : 0.5  
-----  
100 s: (0.9)  
-----

2nd speed rpm : 750.0  
Rack travel in mm : 3.4...3.6  
Del. quantity cm<sup>3</sup>/ : 1.8...2.4  
100 s: (1.5...2.7)  
Spread cm<sup>3</sup> : 0.8  
100 s: (1.2)

## GUIDE SLEEVE POSITION

Control-lever position  
Degree: -3  
Speed rpm : 800  
Rack travel in mm : 0.30...0.70

Governor spring pre-tension  
Click setting x : ?

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
Speed rpm : 1180  
Del. quantity : 157.0...159.0  
1000 : (154.0...162.0)  
Spread cm<sup>3</sup> : 5.00  
1000 : (9.00)  
2nd version

Speed rpm : 1180  
Del.quantity cm3/ : 148.0...150.0  
1000 s: (145.0...153.0)  
Spread cm3 : 5.00  
1000 s: (9.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 56...64

#### Testing:

1st rack travel in: 9.70  
Speed rpm : 1210...1220  
2nd rack travel in: 4.00  
Speed rpm : 1240...1260  
4th rack travel in: 1350  
Speed rpm : 0.30...1.40

#### LOW IDLE 1

Control lever  
position degrees: 32...40  
Setting point w/out bumper spring  
Speed rpm : 750  
Rack travel in mm : 3.4  
Speed rpm : 750  
Rack travel in mm : 3.30...3.50  
Rack travel in mm : 2.00  
Speed rpm : 755...815

#### SET IDLE AUXILIARY SPRING

Rack travel in mm : 2.00

#### TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 1180  
Rack travel in m: 10.70...10.80  
2nd speed rpm : 950  
Rack travel in m: 11.20...11.40  
3rd speed rpm : 1075  
Rack travel in m: 11.00...11.20

#### START CUT-OUT

Speed 1/min : 5 (0)

#### FUEL DELIVERY CHARACTERISTICS

##### 1st version

Speed rpm : 950  
Del.quantity cm3/ : 168.0...172.0  
1000 s: (165.0...175.0)  
Spread cm3 : 8.00  
1000 s: (12.0)

##### 2nd version

Speed rpm : 975

Del.quantity cm3/ : 159.0...163.0  
1000 s: (156.0...166.0)  
Spread cm3 : 9.00  
1000 s: (12.0)

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 9.70  
Speed rpm : 1210...1220

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 150.0...170.0  
1000 s: (146.0...174.0)

Remarks:

:

When adjusting and checking, adjust speed regulation to 1210...1220 l/min. Afterwards, readjust speed regulation to 1160...1170 l/min.

#### APPLICATION

Version 1 = Combine harvester  
Version 2 = Forage harvester

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB 11,0 Q11  
Edition : 18.12.87  
Replaces : -  
Test oil : ISO-4113

Combination no. : 0 401 876 753A

Injection pump  
Pump designation : PE6P120A320LS3815-10  
EP type number : 0 411 826 735  
Governor  
Governor design. : RSV750...1150P1A820-6  
Governor no. : 0 421 833 227

Customer-spec. information  
Customer : DAIMLER-BENZ

Engine : OM421A

1st version kW : 184.0  
Rated speed : 2300

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
quantity min. 1/h: 100...120

Test nozzle holder  
assembly : 1 688 901 019

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
x Wall thickness  
x Length mm : 6.00x1.50x1000

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values -----

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.00...4.10  
                  : (3.95...4.15)  
Rack travel in mm : 9.00...12.00  
Firing order : 6- 3- 5- 2- 4- 1

Phasing : 0-45-120-165-240-285

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

## BASIC SETTING

1st speed rpm : 1180  
-----  
Rack travel in mm : 10.10...10.20  
-----  
Del. quantity cm3/ : 14.8...15.0  
-----  
100 s: (14.5...15.3)  
-----  
Spread cm3 : 0.5  
-----  
100 s: (0.9)  
-----

2nd speed rpm : 750.0  
Rack travel in mm : 3.4...3.6  
Del. quantity cm3/ : 1.8...2.4  
100 s: (1.5...2.7)  
Spread cm3 : 0.8  
100 s: (1.2)

## GUIDE SLEEVE POSITION

Control-lever position  
Degree: -3  
Speed rpm : 800  
Rack travel in mm : 0.30...0.70

Governor spring pre-tension  
Click setting x : ?

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
Speed rpm : 1180  
Del. quantity : 148.0...150.0  
1000 : (145.0...153.0)  
Spread cm3 : 5.00  
1000 : (9.00)

## RATED SPEED

1st version

Control lever  
position degrees: 56...64

Testing:

1st rack travel in: 9.10  
Speed rpm : 1210...1220  
2nd rack travel in: 4.00  
Speed rpm : 1240...1260  
4th rack travel in: 1350  
Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever  
position degrees: 32...40  
Setting point w/out bumper spring  
Speed rpm : 750  
Rack travel in mm : 3.4  
Speed rpm : 750  
Rack travel in mm : 3.30...3.50  
Rack travel in mm : 2.00  
Speed rpm : 755...815

SET IDLE AUXILIARY SPRING

Rack travel in mm : 2.00

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1180  
Rack travel in m: 10.10...10.20  
2nd speed rpm : 950  
Rack travel in m: 10.50...10.70  
3rd speed rpm : 1075  
Rack travel in m: 10.30...10.40

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 950  
Del. quantity cm<sup>3</sup>/ : 159.0...163.0  
1000 s: (156.0...166.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 9.10  
Speed rpm : 1210...1220

STARTING FUEL DELIVERY

Speed rpm : 100  
Del. quantity cm<sup>3</sup>/ : 150.0...170.0  
1000 s: (146.0...174.0)

Remarks:

:

When adjusting and checking, adjust  
speed regulation to 1210...1220 l/min.  
Afterwards, readjust speed regulation  
to 1160...1170 l/min.

APPLICATION

Forage harvester





Control lever  
position degrees: 56...64

Testing:

1st rack travel in: 10.20  
Speed rpm : 1210...1220  
2nd rack travel in: 4.00  
Speed rpm : 1235...1255  
4th rack travel in: 1350  
Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever  
position degrees: 32...40  
Setting point w/out bumper spring  
Speed rpm : 750  
Rack travel in mm : 3.4  
Speed rpm : 750  
Rack travel in mm : 3.30...3.50  
Rack travel in mm : 2.00  
Speed rpm : 755...815

SET IDLE AUXILIARY SPRING  
Rack travel in mm : 2.00

TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 1180  
Rack travel in m: 11.20...11.30  
2nd speed rpm : 950  
Rack travel in m: 11.70...11.80  
3rd speed rpm : 1075  
Rack travel in m: 11.40...11.60

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 950  
Del. quantity cm<sup>3</sup>/ : 174.0...178.0  
1000 s: (171.0...181.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 10.20  
Speed rpm : 1210...1220

STARTING FUEL DELIVERY

Speed rpm : 100  
Del. quantity cm<sup>3</sup>/ : 150.0...170.0  
1000 s: (146.0...174.0)

Remarks:

:

When adjusting and checking, adjust  
speed regulation to 1210...1220 l/min.  
Afterwards, readjust speed regulation  
to 1160...1170 l/min.

APPLICATION

Combine-harvester

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB 11,0 Q13  
Edition : 18.12.87  
Replaces : -  
Test oil : ISO-4113

Combination no. : 0 401 876 753C

Injection pump  
Pump designation : PE6P120A32QLS3815-10  
EP type number : 0 411 826 735  
Governor  
Governor design. : RSV750...1150P1A820-6

Governer no. : 0 421 833 227

Customer-spec. information  
Customer : DAIMLER-BENZ

Engine : OM421A

1st version kW : 184.0  
Rated speed : 2300

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
quantity min. 1/h: 100...120

Test nozzle holder  
assembly : 1 688 901 019

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
x Wall thickness  
x Length mm : 6,00x1,50x1000

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values -----

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.00...4.10  
: (3.95...4.15)  
Rack travel in mm : 9.00...12.00  
Firing order : 6- 3- 5- 2- 4- 1

Phasing : 0-45-120-165-240-285

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

## BASIC SETTING

1st speed rpm : 1180  
-----  
Rack travel in mm : 10.40...10.50  
-----  
Del. quantity cm<sup>3</sup>/ : 15.3...15.5  
-----  
100 s: (15.0...15.8)  
-----  
Spread cm<sup>3</sup> : 0.5  
-----  
100 s: (0.9)  
-----

2nd speed rpm : 750.0  
Rack travel in mm : 3.4...3.6  
Del. quantity cm<sup>3</sup>/ : 1.8...2.4  
100 s: (1.5...2.7)  
Spread cm<sup>3</sup> : 0.8  
100 s: (1.2)

## GUIDE SLEEVE POSITION

Control-lever position  
Degree: -3  
Speed rpm : 800  
Rack travel in mm : 0.30...0.70

Governor spring pre-tension  
Click setting x : ?

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
Speed rpm : 1180  
Del. quantity : 153.0...155.0  
1000 : (150.0...158.0)  
Spread cm<sup>3</sup> : 5.00  
1000 : (9.00)

## RATED SPEED

1st version

Control lever  
position degrees: 56...64

Testing:

1st rack travel in: 9.40  
Speed rpm : 1210...1220  
2nd rack travel in: 4.00  
Speed rpm : 1240...1260  
4th rack travel in: 1350  
Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever  
position degrees: 32...40  
Setting point w/out bumper spring  
Speed rpm : 750  
Rack travel in mm : 3.4  
Speed rpm : 750  
Rack travel in mm : 3.30...3.50  
Rack travel in mm : 2.00  
Speed rpm : 755...815

SET IDLE AUXILIARY SPRING

Rack travel in mm : 2.00

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1180  
Rack travel in m: 10.40...10.50  
2nd speed rpm : 950  
Rack travel in m: 11.00...11.20  
3rd speed rpm : 1075  
Rack travel in m: 10.60...10.80

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 950  
Del. quantity cm<sup>3</sup>/ : 164.0...168.0  
1000 s: (161.0...171.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 9.40  
Speed rpm : 1210...1220

STARTING FUEL DELIVERY

Speed rpm : 100  
Del. quantity cm<sup>3</sup>/ : 150.0...170.0  
1000 s: (146.0...174.0)

Remarks:

:

When adjusting and checking, adjust  
speed regulation to 1210...1220 l/min.  
Afterwards, readjust speed regulation  
to 1160...1170 l/min.

APPLICATION

Forage harvester

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : PEN 10,0 K  
Edition : 07.01.88  
Replaces : 7.11.86  
Test oil : ISO-4113

Combination no. : 0 401 876 754

Injection pump  
Pump designation : PE6P110A320RS3152  
EP type number : 0 411 816 746  
Governor  
Governor design. : RSV200...1100P4A515-  
1  
Governor no. : 0 421 833 247

Customer-spec. information  
Customer : VOLVO-PENTA

Engine : TD100G

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp, °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
x Wall thickness : 6.00X1.50X600  
x Length mm

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values -----

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.50...3.60  
: (3.45...3.65)

Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 12.60...12.70

Del. quantity cm3/ : 17.2...17.4

100 s: (16.9...17.7)

Spread cm3 : 0.4

100 s: (0.7)

2nd speed rpm : 250.0

Rack travel in mm : 4.1...4.3

Del. quantity cm3/ : 1.9...2.3

100 s: (1.6...2.5)

Spread cm3 : 0.4

100 s: (0.7)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 6.00

## FULL LOAD DELIV. AT FULL LOAD STOP

### 1st version

Speed rpm : 700

Aneroid pressure h: 1000

Del. quantity : 172.0...174.0

1000 : (169.0...177.0)

Spread cm3 : 4.00

1000 : (7.50)

## RATED SPEED

### 1st version

Control lever

position degrees: 71...79

### Testing:

1st rack travel in: 11.60

Speed rpm : 1120...1130

2nd rack travel in: 4.00

Speed rpm : 1165...1195

4th rack travel in: 1300

Speed rpm : 0.30...1.40

#### LOW IDLE 1

Control lever

position degrees: 25...33

Setting point w/out bumper spring

Speed rpm : 250

Rack travel in mm : 3.7

#### Testing:

Speed rpm : 100

Speed rpm : 250

Rack travel in mm : 4.10...4.30

Rack travel in mm : 2.00

Speed rpm : 290...350

Aneroid/Altitude

Compensator Test

#### 1st version

Setting

Speed rpm : 500

Rack travel in mm : 1000

Contr.-rod trav.mm: 12.60...12.70

#### Measurement

Speed 1/min : 500

1st pressure hPa : -

Rack travel in m: 10.10...10.20

2nd pressure hPa : 580

Rack travel in m: 12.40...12.50

3rd pressure hPa : 270

Rack travel in m: 10.30...10.50

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: -

Speed rpm : 700

Del.quantity cm3/ : 124.5...127.5

1000 s: (122.0...130.0)

#### BREAKAWAY

#### 1st version

1mm rack travel less than

full load rack tr: 11.60

Speed rpm : 1120...1130

#### STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/ : 170.0...200.0

1000 s: (166.0...204.0)

N12

Rack travel in mm : 20.00...21.00

#### LOW IDLE

Speed rpm : 250

Rack travel in mm : 4.10...4.30

Del.quantity cm3/ : 19.0...23.0

1000 s: (16.5...25.5)

Spread cm3 : 4.50

1000 s: (7.50)

Remarks:

:

Delivery-valve spring pre-tension =

2.40...2.60 mm.

Permissible alteration from 2.20...2.90

mm

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB 11,0 D 6  
 Edition : 15.01.88  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 401 876 764  
 Injection pump  
 Pump designation : PE6P110A32OLS3805-10  
 EP type number : 0 411 816 740  
 Governor  
 Governor design. : RSV650...1200POA820-9  
 Governor no. : 0 421 833 294  
 Customer-spec. information  
 Customer : DAIMLER-BENZ  
 Engine : OM421  
 1st version kW : 159.0  
 Rated speed : 2400

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42  
 Overflow valve : 1 417 413 025  
 Inlet press., bar : 1.50  
 Overflow  
 quantity min. 1/h: 100...120  
 Test nozzle holder  
 assembly : 0 681 343 009  
 Opening  
 pressure, bar : 172...175  
 Test lines : 1 680 750 015  
 Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X600  
 (A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values -----

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

N13

Prestroke mm : 4.00...4.10  
 : (3.95...4.15)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 6- 3- 5- 2- 4- 1

Phasing : 0-45-120-165-240-285

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

## BASIC SETTING

1st speed rpm : 1230  
 -----  
 Rack travel in mm : 12.10...12.20  
 -----  
 Del. quantity cm<sup>3</sup>/ : 13.4...13.6  
 -----  
 100 s: (13.1...13.8)  
 -----  
 Spread cm<sup>3</sup> : 0.4  
 -----  
 100 s: (0.8)  
 -----  
 2nd speed rpm : 650.0  
 Rack travel in mm : 6.0...6.2  
 Del. quantity cm<sup>3</sup>/ : 1.6...2.2  
 100 s: (1.3...2.4)  
 Spread cm<sup>3</sup> : 0.4  
 100 s: (0.7)

## GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -3  
 Speed rpm : 800  
 Rack travel in mm : 0.30...0.70

Governor spring pre-tension  
 Click setting x : ?

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 1230  
 Del. quantity : 134.0...136.0  
 1000 : (131.5...138.5)  
 Spread cm<sup>3</sup> : 4.00  
 1000 : (8.00)

## RATED SPEED

1st version  
 Control lever  
 position degrees: 45...53

Testing:

1st rack travel in: 11.20  
Speed rpm : 1260...1270  
2nd rack travel in: 4.00  
Speed rpm : 1290...1320  
4th rack travel in: 1350  
Speed rpm : 0.30...1.40

#### LOW IDLE 1

Control lever  
position degrees: 23...31  
Setting point w/out bumper spring  
Speed rpm : 650  
Rack travel in mm : 6.1

#### Testing:

Speed rpm : 100  
Minimum rack travel: 19.50  
Speed rpm : 650  
Rack travel in mm : 6.00...6.20  
Rack travel in mm : 2.00  
Speed rpm : 650...715

#### SET IDLE AUXILIARY SPRING

Rack travel in mm : 2.00

#### TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1230  
Rack travel in m: 12.10...12.30  
2nd speed rpm : 950  
Rack travel in m: 12.80...12.90  
3rd speed rpm : 1100  
Rack travel in m: 12.50...12.70

#### FUEL DELIVERY CHARACTERISTICS

##### 1st version

Speed rpm : 950  
Del. quantity cm<sup>3</sup>/ : 136.0...140.0  
1000 s: (133.0...143.0)  
Spread cm<sup>3</sup> : 6.00  
1000 s: (9.0)

#### BREAKAWAY

##### 1st version

1mm rack travel less than

full load rack travel: 11.20  
Speed rpm : 1260...1270

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del. quantity cm<sup>3</sup>/ : 130.0...150.0  
1000 s: (126.0...154.0)

Remarks:

:

When adjusting and checking, adjust  
speed regulation to 1210...1220 l/min.  
Afterwards, readjust speed regulation  
to 1160...1170 l/min.

#### APPLICATION

Combine-harvester

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MAN 10,0 A  
Edition : 07.01.88  
Replaces : 18.9.87  
Test oil : ISO-4113

Combination no. : 0 402 035 020

Injection pump  
Pump designation : PESSP120A720/3LS512  
EP type number : 0 412 025 021  
Governor  
Governor design. : RQ300/1100PA813-1  
Governor no. : 0 421 801 405

Customer-spec. information  
Customer : MAN

Engine : D286SLF/260

1st version kW : 191.0  
Rated speed : 2200

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 1 688 901 019

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
x Wall thickness  
x Length mm : 6.00X1.50X1000

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values -----

## BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.50...3.60  
                  : (3.45...3.65)  
Rack travel in mm : 9.00...12.00  
Firing order : 1- 3- 5- 4- 2

Phasing : 0-72-144-216-288

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 5

## BASIC SETTING

1st speed rpm : 750

Rack travel in mm : 10.70...10.80

Del. quantity cm3/ : 20.9...21.1

100 s: (20.6...21.4)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 3.9...4.1

Del. quantity cm3/ : 1.2...1.8

100 s: (0.9...2.1)

Spread cm3 : 0.8

100 s: (1.2)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 600

Rack travel in mm : 19.20...20.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 750

Aneroid pressure h: 1000

Del. quantity : 209.0...211.0

1000 : (206.0...214.0)

Spread cm3 : 5.00

1000 : (9.00)

## RATED SPEED

1st version

Setting point:

Speed rpm : 600

Rack travel in mm : 20.0

Testing:

1st rack travel in: 9.00



Speed rpm : 1145...1160  
2nd rack travel in: 4.00  
Speed rpm : 1180...1210  
4th rack travel in: 1300  
Speed rpm : 0.00...1.00

#### LOW IDLE 1

Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 4.0

#### Testing:

Speed rpm : 100  
Minimum rack travel: 5.50  
Speed rpm : 300  
Rack travel in mm : 3.90...4.10  
Rack travel in mm : 2.00  
Speed rpm : 320...380

#### TORQUE CONTROL

Dimension a mm : 0.30  
Torque control curve - 1st version  
1st speed rpm : 1100  
Rack travel in m: 10.00...10.10  
2nd speed rpm : 750  
Rack travel in m: 10.80...11.00  
3rd speed rpm : 920  
Rack travel in m: 10.40...10.60

Aneroid/Altitude  
Compensator Test

#### 1st version

Setting  
Speed rpm : 500  
Rack travel in mm : 1000  
Contr.-rod trav.mm: 10.70...10.80

#### Measurement

Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 8.20...8.40  
2nd pressure hPa : 460  
Rack travel in m: 10.00...10.10  
3rd pressure hPa : 280  
Rack travel in m: 8.60...8.90

#### START CUT-OUT

Speed 1/min : 220 (240)

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: 1000  
Speed rpm : 1100

Del.quantity cm<sup>3</sup>/ : 193.0...197.0  
1000 s: (190.0...200.0)  
Aneroid pressure h: 1000  
Speed rpm : 650  
Del.quantity cm<sup>3</sup>/ : 200.0...206.0  
1000 s: (197.0...209.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm<sup>3</sup>/ : 135.0...137.0  
1000 s: (132.0...140.0)

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 9.00  
Speed rpm : 1145...1160

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 225.0...245.0  
1000 s: (221.0...249.0)

#### LOW IDLE

Speed rpm : 300  
Rack travel in mm : 3.90...4.10  
Del.quantity cm<sup>3</sup>/ : 12.0...18.0  
1000 s: (9.0...21.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.00)

Remarks:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MAN 10,0 B  
Edition : 07.01.88  
Replaces : 18.9.87  
Test oil : ISO-4113

Combination no. : 0 402 035 021

Injection pump  
Pump designation : PESSP120A720/3LS512  
EP type number : 0 412 025 021  
Governor  
Governor design. : RQV300...1100PA876  
Governor no. : 0 421 813 661

Customer-spec. information  
Customer : MAN

Engine : D2865LF/260

1st version kW : 191.0  
Rated speed : 2200

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 1 688 901 019

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
x Wall thickness  
x Length mm : 6.00X1.50X1000

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values -----

## BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.50...3.60  
                  : (3.45...3.65)  
Rack travel in mm : 9.00...12.00  
Firing order : 1- 3- 5- 4- 2

Phasing : 0-72-144-216-288

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 5

## BASIC SETTING

1st speed rpm : 750

Rack travel in mm : 10.70...10.80

Del. quantity cm3/ : 20.9...21.1

100 s: (20.6...21.4)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 3.9...4.1

Del. quantity cm3/ : 1.2...1.8

100 s: (0.9...2.1)

Spread cm3 : 0.8

100 s: (1.2)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 300  
travel mm : 1.70...2.00

2nd speed rpm : 850  
travel mm : 6.00...6.20

3rd speed rpm : 1100  
travel mm : 8.10...8.30

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1130

Rack travel in mm : 15.20...17.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 750

Aneroid pressure h: 1000

Del. quantity : 209.0...211.0

1000 : (206.0...214.0)

Spread cm3 : 5.00

1000 : (9.00)

## RATED SPEED

1st version

Control lever

position degrees: 49...57

Testing:

1st rack travel in: 9.00

Speed rpm : 1140...1150

2nd rack travel in: 4.00

Speed rpm : 1215...1245

4th rack travel in: 1350

Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever

position degrees: 14...22

Testing:

Speed rpm : 100

Minimum rack travel: 5.50

Speed rpm : 300

Rack travel in mm : 3.90...4.10

CONSTANT REGULATION

Speed rpm : 310...410

TORQUE CONTROL

Dimension a mm : 0.70

Torque control curve - 1st version

1st speed rpm : 750

Rack travel in m: 10.70...10.80

2nd speed rpm : 1100

Rack travel in m: 10.00...10.10

3rd speed rpm : 900

Rack travel in m: 10.40...10.50

Aneroid/Altitude

Compensator Test

1st version

Setting

Speed rpm : 500

Rack travel in mm : 1000

Contr.-rod trav.mm: 10.70...10.80

Measurement

Speed 1/min : 500

1st pressure hPa : -

Rack travel in m: 8.20...8.40

2nd pressure hPa : 460

Rack travel in m: 10.00...10.10

3rd pressure hPa : 280

Rack travel in m: 8.60...8.90

START CUT-OUT

Speed 1/min : 220 (240)

## FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1000

Speed rpm : 1100

Del.quantity cm3/ : 193.0...197.0

1000 s: (190.0...200.0)

Aneroid pressure h: 1000

Speed rpm : 650

Del.quantity cm3/ : 200.0...206.0

1000 s: (197.0...209.0)

Aneroid pressure h: -

Speed rpm : 500

Del.quantity cm3/ : 135.0...137.0

1000 s: (132.0...140.0)

## BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 9.00

Speed rpm : 1140...1150

## STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/ : 225.0...245.0

1000 s: (221.0...249.0)

## LOW IDLE

Speed rpm : 300

Rack travel in mm : 3.90...4.10

Del.quantity cm3/ : 12.0...18.0

1000 s: (9.0...21.0)

Spread cm3 : 8.00

1000 s: (12.00)

Remarks:

:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MAN 11,9A26  
Edition : 11.12.87  
Replaces : 31.7.87  
Test oil : ISO-4113  
  
Combination no. : 0 402 036 049  
  
Injection pump  
Pump designation : PES6P120A720/3LS470-  
2  
EP type number : 0 412 026 050  
Governor  
Governor design. : RQ300/1100PA658-23  
Governor no. : 0 421 801 391

Customer-spec. information  
Customer : MAN

Engine : D2866KUH

1st version kW : 265.0  
Rated speed : 2200

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve  
: 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 1 688 901 019

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
x Wall thickness  
x Length mm : 6.00x1.50x1000

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values -----

## BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 2.80...2.90  
: (2.75...2.95)  
Rack travel in mm : 9.00...12.00  
Firing order : 6- 2- 4- 1- 5- 3

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

## BASIC SETTING

1st speed rpm : 750

Rack travel in mm : 12.50...12.60

Del. quantity cm3/ : 23.8...24.0

100 s: (23.5...24.3)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 4.8...5.0

Del. quantity cm3/ : 1.2...1.8

100 s: (0.9...2.1)

Spread cm3 : 0.8

100 s: (1.2)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 600

Rack travel in mm : 19.20...20.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 750

Aneroid pressure h: 1000

Del. quantity : 238.0...240.0

1000 : (235.0...243.0)

Spread cm3 : 5.00

1000 : (9.00)

## RATED SPEED

1st version

Setting point:

Speed rpm : 600

Rack travel in mm : 20.0

Testing:

1st rack travel in: 10.30  
Speed rpm : 1145...1160  
2nd rack travel in: 4.00  
Speed rpm : 1180...1210  
4th rack travel in: 1300  
Speed rpm : 0.00...1.00

#### LOW IDLE 1

Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 4.9

#### Testing:

Speed rpm : 100  
Minimum rack travel: 6.40  
Speed rpm : 300  
Rack travel in mm : 4.80...5.00  
Rack travel in mm : 2.00  
Speed rpm : 345...385

#### TORQUE CONTROL

Dimension a mm : 0.55  
Torque control curve - 1st version  
1st speed rpm : 750  
Rack travel in m: 12.60...12.90  
2nd speed rpm : 1100  
Rack travel in m: 11.30...11.40  
3rd speed rpm : 935  
Rack travel in m: 12.10...12.50  
4th speed rpm : 990  
Rack travel in m: 11.80...12.10

#### Aneroid/Altitude Compensator Test

#### 1st version

Setting  
Speed rpm : 500  
Rack travel in mm : 1000  
Contr.-rod trav.mm: 12.50...12.60

#### Measurement

Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 8.60...8.70  
2nd pressure hPa : 190  
Rack travel in m: 8.90...9.00  
3rd pressure hPa : 520  
Rack travel in m: 11.10...11.40

#### START CUT-OUT

Speed 1/min : 190 (210)

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

N20

Aneroid pressure h: 1000  
Speed rpm : 1100  
Del.quantity cm3/ : 213.0...219.0  
1000 s: (210.0...222.0)  
Aneroid pressure h: 1000  
Speed rpm : 650  
Del.quantity cm3/ : 239.0...245.0  
1000 s: (236.0...248.0)  
Aneroid pressure h: 520  
Speed rpm : 500  
Del.quantity cm3/ : 188.0...200.0  
1000 s: (185.0...203.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 115.0...117.0  
1000 s: (112.0...120.0)

#### BREAKAWAY

#### 1st version

1mm rack travel less than

full load rack tr: 10.30  
Speed rpm : 1145...1160

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 225.0...245.0  
1000 s: (221.0...249.0)

#### LOW IDLE

Speed rpm : 300  
Rack travel in mm : 4.80...5.00  
Del.quantity cm3/ : 12.0...18.0  
1000 s: (9.0...21.0)  
Spread cm3 : 8.00  
1000 s: (12.00)

#### Remarks:

: MAN-NR. 2-7719

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MAN 11,9A21  
Edition : 29.01.88  
Replaces : 12.9.86  
Test oil : ISO-4113

Combination no. : 0 402 036 057

Injection pump  
Pump designation : PES6P120A720/3LS470-  
2  
EP type number : 0 412 026 050  
Governor  
Governor design. : RQV300...1100PA700-1  
Governor no. : 0 421 813 528

Customer-spec. information  
Customer : MAN

Engine : D2866LF

1st version kW : 243.0  
Rated speed : 2200

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve  
: 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 1 688 901 019

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
x Wall thickness  
x Length mm : 6.00x1.50x1000

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values -----

BEGINNING OF DELIVERY  
Test pressure, bar: 30...32

Prestroke mm : 2.80...2.90  
: (2.75...2.95)  
Rack travel in mm : 9.00...12.00  
Firing order : 6- 2- 4- 1- 5- 3

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

## BASIC SETTING

1st speed rpm : 750

Rack travel in mm : 11.30...11.40

Del. quantity cm3/ : 20.2...20.4

100 s: (19.9...20.7)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 4.7...4.9

Del. quantity cm3/ : 1.2...1.8

100 s: (0.9...2.1)

Spread cm3 : 0.8

100 s: (1.2)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 300

travel mm : 1.40...1.60

2nd speed rpm : 850

travel mm : 5.60...5.90

3rd speed rpm : 1100

travel mm : 7.70...7.90

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1130

Rack travel in mm : 15.20...17.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 750

Aneroid pressure h: 1000

Del. quantity : 202.0...204.0

1000 : (199.0...207.0)

Spread cm3 : 5.00  
1000 : (9.00)

#### RATED SPEED

1st version

Control lever  
position degrees: 48...56

Testing:

1st rack travel in: 9.50  
Speed rpm : 1140...1150  
2nd rack travel in: 4.00  
Speed rpm : 1215...1245  
4th rack travel in: 1350  
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever  
position degrees: 14...22

Testing:

Speed rpm : 100  
Minimum rack travel: 6.30  
Speed rpm : 300  
Rack travel in mm : 4.70...4.90

#### CONSTANT REGULATION

Speed rpm : 310...410

#### TORQUE CONTROL

Dimension a mm : 0.80  
Torque control curve - 1st version  
1st speed rpm : 750  
Rack travel in m: 11.30...11.40  
2nd speed rpm : 1100  
Rack travel in m: 10.50...10.60  
3rd speed rpm : 850  
Rack travel in m: 11.00...11.20  
4th speed rpm : 975  
Rack travel in m: 10.70...11.00

Aneroid/Altitude  
Compensator Test

1st version

Setting  
Speed rpm : 500  
Rack travel in mm : 1000  
Contr.-rod trav.mm: 11.30...11.40

Measurement

Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 8.90...9.10  
2nd pressure hPa : 85  
Rack travel in m: 9.30...9.40  
3rd pressure hPa : 280

Rack travel in m: 10.50...10.90

#### START CUT-OUT

Speed 1/min : 220 (240)

#### FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1000  
Speed rpm : 1100  
Del.quantity cm3/ : 204.0...206.0  
1000 s: (201.0...209.0)  
Aneroid pressure h: 1000  
Speed rpm : 650  
Del.quantity cm3/ : 208.0...214.0  
1000 s: (205.0...217.0)  
Aneroid pressure h: 280  
Speed rpm : 500  
Del.quantity cm3/ : 184.0...196.0  
1000 s: (181.0...199.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 132.0...134.0  
1000 s: (129.0...137.0)

#### BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 9.50  
Speed rpm : 1140...1150

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 225.0...245.0  
1000 s: (221.0...249.0)

#### LOW IDLE

Speed rpm : 300  
Rack travel in mm : 4.70...4.90  
Del.quantity cm3/ : 12.0...18.0  
1000 s: (9.0...21.0)  
Spread cm3 : 8.00  
1000 s: (12.00)

Remarks:

: MAN-NR. 2-7757

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MAN 11,9A16  
Edition : 11.12.87  
Replaces : 18.8.87  
Test oil : ISO-4113

Combination no. : 0 402 036 059

Injection pump  
Pump designation : PES6P120A723/3LS470-  
2  
EP type number : 0 412 026 050  
Governor  
Governor design. : RQV300...1100PA669-1  
Governor no. : 0 421 813 534

Customer-spec. information  
Customer : MAN

Engine : D2866KUH

1st version kW : 265.0  
Rated speed : 2200

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 1 688 901 019

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
x Wall thickness  
x Length mm : 6.00X1.50X1000

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values -----

BEGINNING OF DELIVERY  
Test pressure, bar: 30...32

N23

Prestroke mm : 2.80...2.90  
(2.75...2.95)  
Rack travel in mm : 9.00...12.00  
Firing order : 6- 2- 4- 1- 5- 3

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

## BASIC SETTING

1st speed rpm : 750  
-----  
Rack travel in mm : 12.50...12.60  
-----  
Del. quantity cm3/ : 23.8...24.0  
-----  
100 s: (23.5...24.3)  
-----  
Spread cm3 : 0.5  
-----  
100 s: (0.9)  
-----

2nd speed rpm : 300.0  
Rack travel in mm : 4.8...5.0  
Del. quantity cm3/ : 1.2...1.8  
100 s: (0.9...2.1)  
Spread cm3 : 0.8  
100 s: (1.2)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 300  
travel mm : 1.70...2.00  
2nd speed rpm : 850  
travel mm : 6.00...6.20  
3rd speed rpm : 1100  
travel mm : 8.10...8.30

## GUIDE SLEEVE POSITION

Control-lever position  
Degree: -1  
Speed rpm : 1130  
Rack travel in mm : 15.20...17.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
Speed rpm : 750  
Aneroid pressure h: 1000  
Del. quantity : 238.0...240.0  
1000 : (235.0...243.0)



Spread cm<sup>3</sup> : 5.00  
1000 : (9.00)

#### RATED SPEED

1st version

Control lever  
position degrees: 60...68

#### Testing:

1st rack travel in: 10.30  
Speed rpm : 1140...1150  
2nd rack travel in: 4.00  
Speed rpm : 1225...1255  
4th rack travel in: 1350  
Speed rpm : 0.00...1.00

#### LOW IDLE 1

Control lever  
position degrees: 6...14

#### Testing:

Speed rpm : 100  
Minimum rack travel: 6.40  
Speed rpm : 300  
Rack travel in mm : 4.80...5.00  
Rack travel in mm : 2.00  
Speed rpm : 360...420

#### TORQUE CONTROL

Dimension a mm : 1.15  
Torque control curve - 1st version  
1st speed rpm : 750  
Rack travel in m: 12.50...12.60  
2nd speed rpm : 1100  
Rack travel in m: 11.30...11.40  
3rd speed rpm : 900  
Rack travel in m: 12.10...12.30  
4th speed rpm : 1000  
Rack travel in m: 11.50...11.80

#### Aneroid/Altitude Compensator Test

1st version

Setting  
Speed rpm : 500  
Rack travel in mm : 1000  
Contr.-rod trav.mm: 12.50...12.60

#### Measurement

Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 8.60...8.70  
2nd pressure hPa : 190  
Rack travel in m: 8.90...9.00  
3rd pressure hPa : 520  
Rack travel in m: 11.10...11.40

#### START CUT-OUT

Speed 1/min : 220 (240)

#### FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1000  
Speed rpm : 1100  
Del.quantity cm<sup>3</sup>/ : 213.0...219.0  
1000 s: (210.0...222.0)  
Aneroid pressure h: 1000  
Speed rpm : 650  
Del.quantity cm<sup>3</sup>/ : 239.0...245.0  
1000 s: (236.0...248.0)  
Aneroid pressure h: 520  
Speed rpm : 500  
Del.quantity cm<sup>3</sup>/ : 188.0...200.0  
1000 s: (188.0...200.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm<sup>3</sup>/ : 115.0...117.0  
1000 s: (112.0...120.0)

#### BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 10.30  
Speed rpm : 1140...1150

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 225.0...245.0  
1000 s: (221.0...249.0)

#### LOW IDLE

Speed rpm : 300  
Rack travel in mm : 4.80...5.00  
Del.quantity cm<sup>3</sup>/ : 12.0...18.0  
1000 s: (9.0...21.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.00)

Remarks:

: MAN-NR. 2-7650

APPLICATION  
Omnibus

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MAN 11,9a24  
 Edition : 11.03.88  
 Replaces : 18.9.87  
 Test oil : ISO-4113  
 Combination no. : 0 402 036 062  
 Injection pump  
 Pump designation : PES6P120A720/3LS470-  
 2  
 EP type number : 0 412 026 050  
 Governor  
 Governor design. : RQ300/1100PA813  
 Governor no. : 0 421 801 358

Customer-spec. information  
 Customer : MAN

Engine : D2866LF/330

1st version kW : 243.0  
 Rated speed : 2200

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve  
 : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 1 688 901 019

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00x1.50x1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values -----

## BEGINNING OF DELIVERY

Test pressure, bar : 30...32

N25

Prestroke mm : 2.80...2.90  
 : (2.75...2.95)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 6- 2- 4- 1- 5- 3

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

## BASIC SETTING

1st speed rpm : 750

Rack travel in mm : 11.10...11.20

Del. quantity cm<sup>3</sup>/ : 20.2...20.4

100 s : (19.9...20.7)

Spread cm<sup>3</sup> : 0.5

100 s : (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 4.7...4.9

Del. quantity cm<sup>3</sup>/ : 1.2...1.8

100 s : (0.9...2.1)

Spread cm<sup>3</sup> : 0.8

100 s : (1.2)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 600

Rack travel in mm : 19.20...20.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 750

Aneroid pressure h : 1000

Del. quantity : 202.0...204.0

1000 : (199.0...207.0)

Spread cm<sup>3</sup> : 5.00

1000 : (9.00)

## RATED SPEED

1st version

Setting point:

Speed rpm : 600

Rack travel in mm : 20.0

Testing:

1st rack travel in: 9.50  
Speed rpm : 1145...1160  
2nd rack travel in: 4.00  
Speed rpm : 1180...1210  
4th rack travel in: 1300  
Speed rpm : 0.00...1.00

#### LOW IDLE 1

Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 4.8

#### Testing:

Speed rpm : 100  
Minimum rack trave: 6.30  
Speed rpm : 300  
Rack travel in mm : 4.70...4.90  
Rack travel in mm : 2.00  
Speed rpm : 340...380

#### TORQUE CONTROL

Dimension a mm : 0.50  
Torque control curve - 1st version  
1st speed rpm : 1100  
Rack travel in m: 10.70...10.80  
2nd speed rpm : 750  
Rack travel in m: 11.90...12.20  
3rd speed rpm : 900  
Rack travel in m: 11.70...11.90  
4th speed rpm : 975  
Rack travel in m: 11.00...11.30

#### Aneroid/Altitude Compensator Test

#### 1st version

Setting  
Speed rpm : 500  
Rack travel in mm : 1000  
Contr.-rod trav.mm: 11.10...11.20

#### Measurement

Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 8.90...9.10  
2nd pressure hPa : 85  
Rack travel in m: 9.30...9.40  
3rd pressure hPa : 280  
Rack travel in m: 10.50...10.80

#### START CUT-OUT

Speed 1/min : 190 (210)

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

N26

Aneroid pressure h: 1000  
Speed rpm : 1100  
Del.quantity cm3/ : 204.0...208.0  
1000 s: (201.0...211.0)  
Aneroid pressure h: 1000  
Speed rpm : 650  
Del.quantity cm3/ : 203.0...209.0  
1000 s: (200.0...212.0)  
Aneroid pressure h: 280  
Speed rpm : 500  
Del.quantity cm3/ : 184.0...196.0  
1000 s: (181.0...199.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 132.0...134.0  
1000 s: (129.0...137.0)

#### BREAKAWAY

#### 1st version

1mm rack travel less than

full load rack tr: 9.50  
Speed rpm : 1145...1160

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 225.0...245.0  
1000 s: (221.0...249.0)

#### LOW IDLE

Speed rpm : 300  
Rack travel in mm : 4.70...4.90  
Del.quantity cm3/ : 12.0...18.0  
1000 s: (9.0...21.0)  
Spread cm3 : 8.00  
1000 s: (12.00)

#### Remarks:

: MAN-NR. 2-7823

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MAN 11,9 B1  
 Edition : 11.12.87  
 Replaces : 18.8.87  
 Test oil : ISO-4113

Combination no. : 0 402 036 065

Injection pump  
 Pump designation : PES6P110A720/3LS477-  
 2  
 EP type number : 0 412 016 071  
 Governor  
 Governor design. : RQV300...1100PA831  
 Governor no. : 0 421 813 574

Customer-spec. information  
 Customer : MAN

Engine : D2866 F

1st version kW : 177.0  
 Rated speed : 2200

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve  
 : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
 x ball thickness  
 x Length mm : 6.00X1.50X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values -----

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.50...3.60  
 : (3.45...3.65)

Rack travel in mm : 9.00...12.00  
 Firing order : 6- 2- 4- 1- 5- 3

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

## BASIC SETTING

1st speed rpm : 800

Rack travel in mm : 11.70...11.80

Del. quantity cm<sup>3</sup>/ : 12.3...12.6

100 s: (12.0...12.8)

Spread cm<sup>3</sup> : 0.4

100 s: (0.7)

2nd speed rpm : 300.0

Rack travel in mm : 5.9...6.1

Del. quantity cm<sup>3</sup>/ : 1.5...2.0

100 s: (1.2...2.2)

Spread cm<sup>3</sup> : 0.4

100 s: (0.7)

(B) Setting of injection pump  
 with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 250  
 travel mm : 1.10...1.30

2nd speed rpm : 450  
 travel mm : 3.00...3.40

3rd speed rpm : 900  
 travel mm : 6.00...6.30

4th speed rpm : 1100  
 travel mm : 7.70...7.90

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1170

Rack travel in mm : 15.20...17.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 800

Del. quantity : 123.0...126.0

1000 : (120.5...128.5)

Spread cm<sup>3</sup> : 4.00

1000 : (7.50)

## RATED SPEED

1st version

Control lever

position degrees: 49...57

Testing:

1st rack travel in: 10.70

Speed rpm : 1140...1150

2nd rack travel in: 4.00

Speed rpm : 1230...1260

4th rack travel in: 1350

Speed rpm : 0.00...1.00

## LOW IDLE 1

Control lever

position degrees: 16...24

Testing:

Speed rpm : 100

Minimum rack travel: 7.50

Speed rpm : 300

Rack travel in mm : 5.90...6.10

## CONSTANT REGULATION

Speed rpm : 300...395

## START CUT-OUT

Speed 1/min : 220 (240)

## FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 1100

Del. quantity cm<sup>3</sup>/ : 132.0...138.0

1000 s: (129.0...141.0)

Speed rpm : 500

Del. quantity cm<sup>3</sup>/ : 117.0...123.0

1000 s: (114.0...126.0)

## BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 10.70

Speed rpm : 1140...1150

## STARTING FUEL DELIVERY

Speed rpm : 100

Del. quantity cm<sup>3</sup>/ : 110.0...130.0

1000 s: (106.0...134.0)

## LOW IDLE

Speed rpm : 300

Rack travel in mm : 5.90...6.10

Del. quantity cm<sup>3</sup>/ : 15.0...20.0

1000 s: (12.5...22.5)

Spread cm<sup>3</sup> : 4.50

1000 s: (7.50)

Remarks:

: MAN-NR. 2-7723